THE WILLIAM L. BRYANT FOUNDATION

American Studies Report Number Two

ARCHAEOLOGICAL INVESTIGATIONS OF GREEN MOUND FLORIDA

BY

Ripley P. Bullen
and
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PREFACE

In this, the second number of the American Studies series of the William L. Bryant Foundation, the archaeology of the coastal shell heaps of eastern Florida is seen in new detail and perspective. The previous Castle Windy report is supplemented, rather than duplicated, for while the Green Mound strata overlap temporally with those of Castle Windy, they extend much farther back in time.

The refinement of our knowledge of stratigraphic sequence, of cultural content through time, is an important aspect of archaeology. And in this respect the present report makes a definite contribution. It firmly establishes, through stratigraphy, the validity of the essentially plain pottery St. Johns I period, and it has, through the evidence of radio-carbon dating, more accurately defined the time at which this period is succeeded by the decorated pottery of the St. Johns II period.

However, the time and space factors of archaeological complexes are not in themselves the end product of archaeology, even though many reports are written as if they were. These factors actually only provide the framework within which we may place data, and analyze it, in our attempt to reconstruct former ways of life.

One of the aspects of understanding cultures of the past is an attempt to work out the subsistence pattern of these peoples and its relation to the environmental framework within which they lived, and to which they adjusted. In this report, and the preceding Castle Windy report, the authors have given us information on this subject. A very definite contribution is the conclusion that the food remains indicate seasonal occupation of the coastal shell heaps at least in St. Johns II times, and the possibility that the people of the earlier St. Johns I times occupied the site either throughout the year or at least into the warmer months.

An interesting sidelight is the evidence of the presence of birds which are now confined to more northerly latitudes. The presence of bones of the now extinct Great Auk in the earlier Cotten site and in the upper levels of Castle Windy may be added to this data to suggest former range differences relating to the changing environment of post-glacial times.

Reports such as this present the accumulating data of archeology which will permit a fuller synthesis of prehistory.

John W. Griffin
National Park Service

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INTRODUCTION

Green Mound, a large prehistoric Indian shell midden located on the east coast of Florida about eight miles southsoutheast of Daytona Beach (Fig. 1), is important not only as a monument to an ancient way of life but also as a repository of scientific information. This report presents some of this information.

Situated beside the marsh bordering the Halifax River, Green Mound is on the western side of the long, low, sandy peninsula which separates the river from the Atlantic Ocean about five hundred yards to the east. Here, adjacent to the oyster and clam producing waters of the brackish river and beside extensive marshes, which must have teemed with water birds of many kinds, a small group of Indians lived for an extremely long time—one which may be counted in hundreds of years—while the midden accumulated.

A short walk took them to the ocean side of the peninsula where coquina and other shellfish were available. They could fish in the river or make a canoe trip of only two or three miles to what is now called Ponce de Leon Inlet (Mosquito Inlet) where large fish and porpoises swam. Small animals and an occasional deer could be secured on the peninsula and at the edge of the marsh. With such an abundance of food available, it is not surprising Indians favored the location of Green Mound as a home.

Plate I. (Opposite) View of Test Ib from near floor to base of midden. William J. Bryant examines the test.

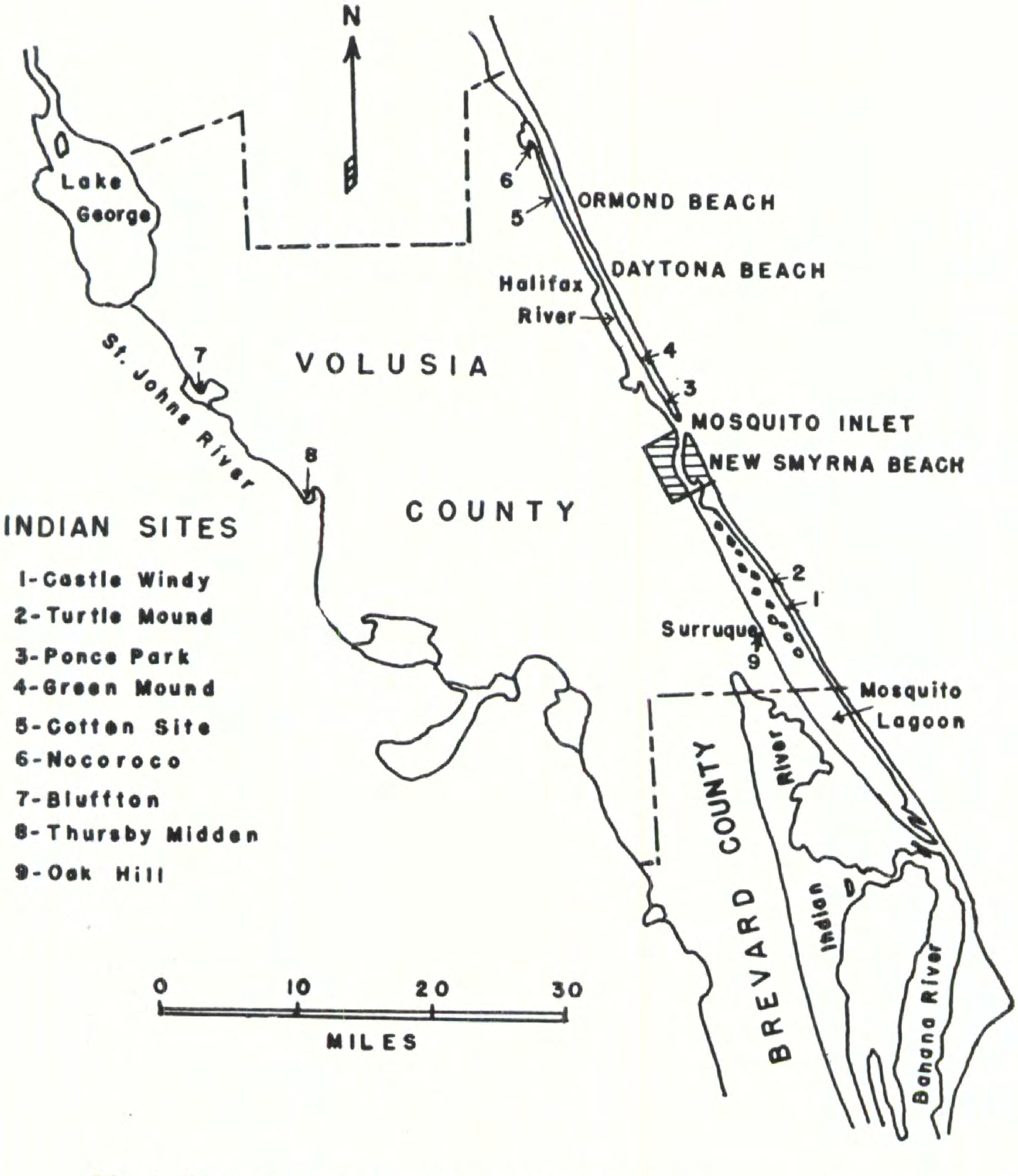
N
Lake George
St. Johns River
VOLUSIA
COUNTY
ORMOND BEACH
DAYTONA BEACH
Halifax River
MOSQUITO INLET
NEW SMYRNA BEACH
Surruque
Mosquito Lagoon
BREVARD COUNTY
Indian River
Banana River
INDIAN SITES
1-Castle Windy
2-Turtle Mound
3-Ponce Park
4-Green Mound
5-Cotten Site
6-Nocoroco
7-Bluffton
8-Thursby Midden
9-Oak Hill
0 10 20 30
MILES
1
2
3
4
5
6
7
8
9

Fig. 1. Map of key archaeological sites in Volusia County, Florida.

HISTORY OF GREEN MOUND

While rising to an elevation of some thirty feet, Green Mound is not as prominent a feature of the landscape as is Turtle Mound, south of New Smyrna Beach, which has been included on coastal maps for several hundred years. It does not seem to have been indicated on Mexia's 1605 map of the region (Rouse, 1951, p. 266).

Jonathan Dickinson and his party must have been near Green Mound on their way north in 1696 from a shipwreck further south. However, his description is not sufficiently clear to permit the identification of where they spent a night in the vicinity (Andrews and Andrews, 1946, p. 72).

Thomas Joffery's 1792 map of "The Peninsula and Gulf of Florida" bears a notation "the 4 pines", apparently to indicate a marine sighting, a short distance north of present day Ponce de Leon Inlet. This note may or may not refer to Green Mound.

J. M. Hawks in *The Florida Gazetteer* of 1871 describes traveling by foot along the beach southward from Daytona Beach and writes (p. 124):

> Three miles further down the beach, a stake marks a dull way across to *Purdie's Mound* or *Green Mound.* This is a pile of oyster shells thirty or more feet high on the western border of the sand hills, where doubtless was once the bank of the river, which has been crowded off, westerly half a mile by the marsh. Across this marsh Mr. Purdie had a canal dug to admit his boat to the foot of the mound, where he intended making extensive improvements; but with the failure of the mill his plans changed and Green Mound is still in the market. This is the highest point of land for several miles, and a palmetto tree standing near the summit is a land-mark on the river and at sea, for several miles.

Amos W. Butler in 1917 (p. 106) mentions the site as:

> No. 18. Green Mound. At Wilber on the peninsula. Shell; undisturbed; forty feet high. Next to Turtle mound in height.

The next record is a picture of an "old sprawling live-oak (*Quercus virginiana*) growing at the basal edge of Green Mound" used by the botanist, John K. Small (1924, opposite p. 53) to illustrate an article on Florida in the *Journal of the New York Botanical Garden*.

Small was the first to make an archaeological investigation at Green Mound. In his 1929 book, *From Eden to Sahara, Florida's Tragedy,* he reports this work and also gives a brief description of the midden both before and after much of it had been removed for road material. Small's three accounts follow (pp. 22-23, 108, 109) :

> At 8 miles [south of the "stone bridge" at Daytona Beach] there is a very large midden, locally called "Green-Mound," and at 10 miles lies another [Ponce Park]. An excavation at Green-Mound gave a perpendicular section of about twelve feet. The contents were mostly oyster-shells, clam-shells and conch-shells with large layers or clusters of small shells placed here and there. There is little extraneous matter in the midden—only some layers of humus and charcoal, indicating successive occupations, and bones of animals and rarely a human skeleton. Especially interesting were the large epiphysical plates from the spinal-column of a whale which was evidently stranded on the beach near there centuries ago and doubtless feasted on by the aborigines. These bony structures resemble gigantic lima-beans and when removed from the surrounding shells, promptly crumbled.

Small was describing a section similar to that illustrated in Plates I and V. The small shells he mentioned were those of coquinas. The vertebrae were probably those of the bottlenosed dolphin or porpoise whose bones are fairly common at Green Mound. Small continues:

> In passing through the Halifax River region [returning from south Florida] we revisited the kitchen-midden referred to on a preceeding page as Green Mound. This is one of the higher shell-mounds and commands a fine view over the coastal dunes in all directions and the mainland to the westward. Its plant covering is largely tropical, as is that of the neighboring mounds. On its summit we added another tropical plant not only to the list of the flora of these middens, but also to that of the North American mainland—a heliotrope-vine (Tournefortia poliochros) .

> Alas, since writing the above reference to Green Mound, this kitchen-midden also has been shorn of its natural native growth, and exotic weeds have promptly taken possession of the whole surface, thus repeating the process met throughout the State.

Small's brief view of the interior of Green Mound is typical of such large shell middens which are formed of alternate layers of fairly clean shells and charcoal-impregnated zones in which food bones, pottery, and other artifacts are found. The result is a specialized habitat where nitrogenous materials and lime are present in extremely large quantities. This habitat is well drained and, because of its height, more exposed to sunlight than the surrounding land where the native vegetation, which is not especially well adapted to growing on a shell midden, shades the ground. This plus the ameliorating effect of the ocean and of the lagoon explains the semi-tropical growth found on these high shell middens which so interested Small.

Apparently the first extensive removal of shells for road construction from Green Mound occurred shortly before the publication of Small's book or about 1927.

Green Mound was tested by John W. Griffin (1949, pp. 2-3) in 1941 and again in 1946 under the auspices of the Florida Park Service. When first seen by Griffin around 1933, almost a third of the midden had been removed for road material but at that time the removal of shells had temporarily ceased as the site had been purchased, fenced, and posted by N. P. Young of Daytona Beach. Thus it remained until 1946 when it was reopened as a shell pit by a new owner. A considerable volume of the mound was removed before the site was purchased in 1948 by a group of interested citizens, of whom R. L. Longstreet of Daytona Beach was the moving force, as a conservation measure. Subsequently, it was transferred to the Florida Park Service who maintain the mound for the State of Florida as a historic memorial.

The amount of material removed between 1946 and 1948 must have been considerable as the appearance now would indicate that over three-quarters of the total volume of the midden has disappeared (Pl. II; Fig. 2). Today the eastern side of the mound towers nearly thirty feet above the surrounding land. As the center of the mound has disappeared it is possible the original height was about forty feet as indicate by Butler.

Griffin's work at Green Mound will be referred to again later. Our work, done between March 3rd. and 13th., 1958, was a cooperative enterprise representing collaboration between the William L. Bryant Foundation, the Florida State Museum, and the Central Florida Museum. Permision for the work was given by the Florida Park Service and the data are, of course, available to them in case they should sometime wish to make an interpretive exhibit of Green Mound.

EXCAVATIONS

Problems

Our work at Green Mound was a continuation of that at Castle Windy. There we found Halifax ceramics to be relatively late during the St. Johns II period but definitely pre-Columbian in date by several centuries. We also discovered that the introduction of St. Johns Check Stamped pottery, marking the close of the St. Johns I and the beginning of the St. Johns II periods, occurred earlier than had been previously estimated.

The date of this change is very important to a study of Florida's prehistory and may, by extension, be applied to much of the State. Consequently, we wished to determine, as closely as possible, when the division between St. Johns I and St. Johns II occurred. We also wished to get a good sample of known St. Johns I period pottery and other artifacts to see if there were any other discernible changes other than the introduction of check-stamping on pottery.

Griffin's work indicated Green Mound to be a stratified midden with deposits of the St. Johns II period overlying those of the St. Johns I period. As it was the only place we knew of where this situation was extant and hence could still be investigated, we decided to excavate there.

Plate II. General view of the southern face before work. Shows slump and path.

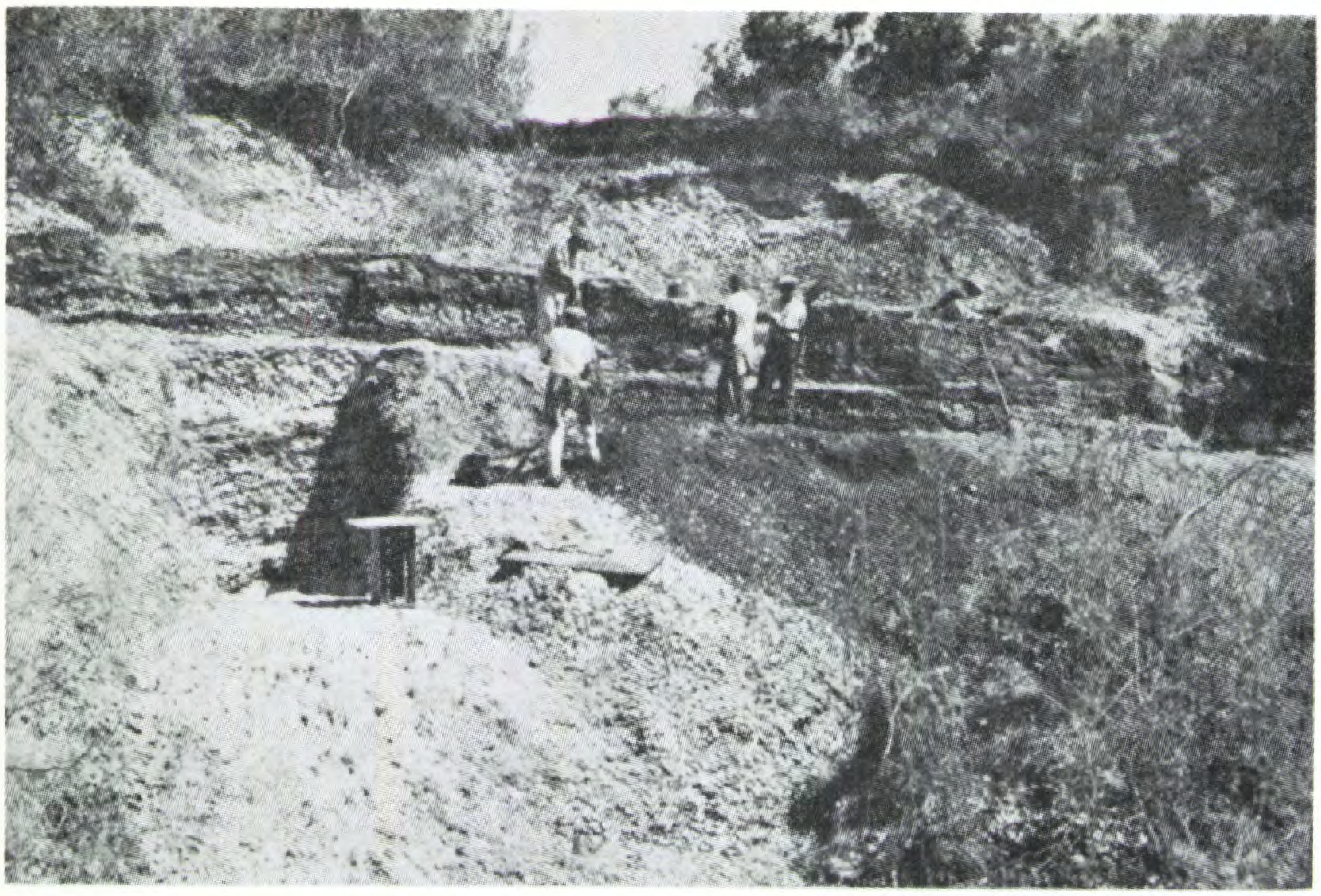

Plate III. Excavation in process–connecting profile from Test Ib to Test II.

Tests

Figures 2 and 3 present a plan view of Green Mound, locating our tests, and a profile of the sections exposed by us in our Tests I, II, and III. The fact that we are dealing with only a remnant of the midden is clear from the plan view.

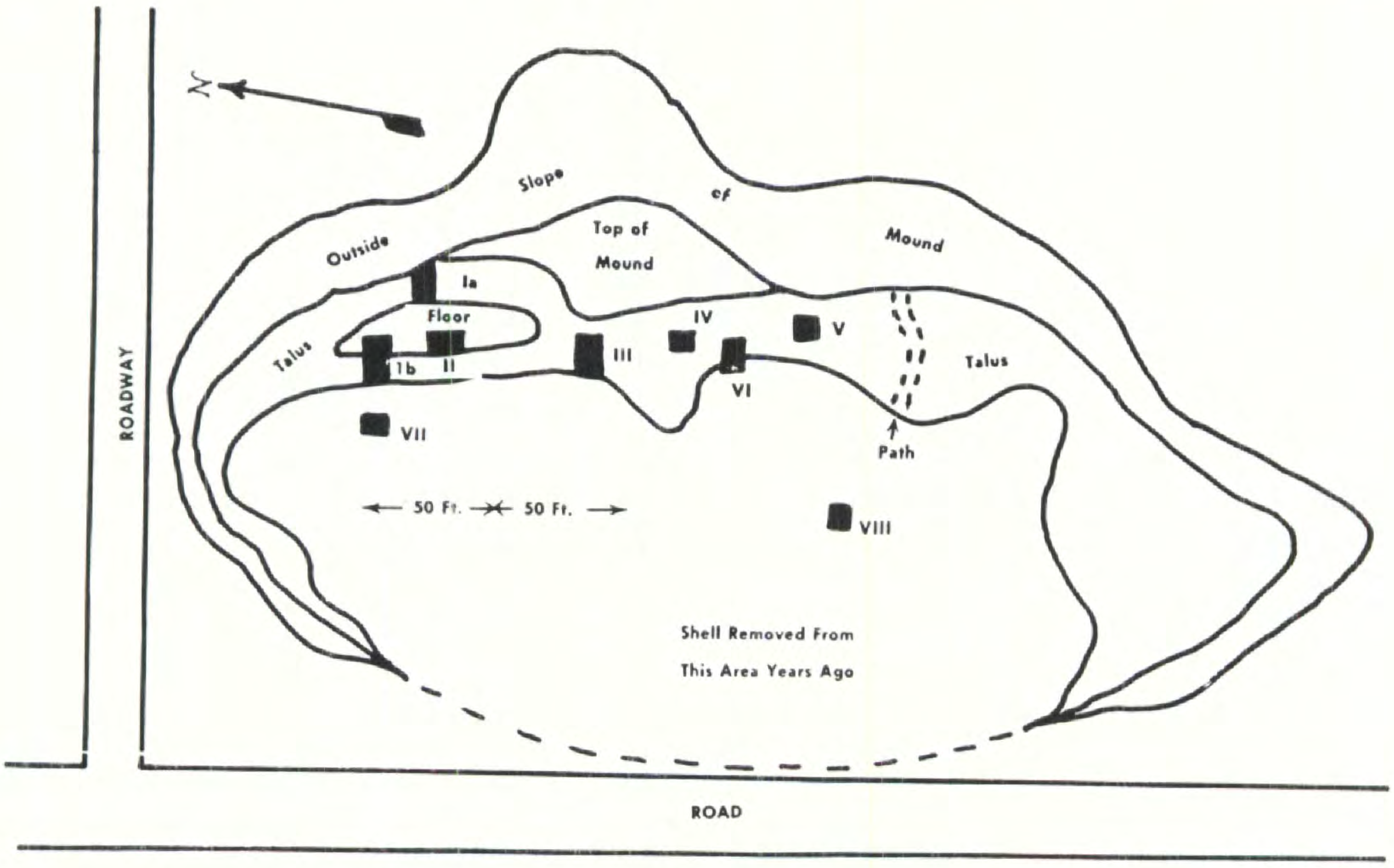
N
Slope
of
Mound
Outside
Top of
Mound
Ia
Floor
Talus
Ib
II
III
IV
V
VI
Talus
Path
VII
50 Ft.
50 Ft.
VIII
Shell Removed From
This Area Years Ago
ROADWAY
ROAD

Fig. 2. Plan or map of Green Mound showing location of tests.

The most striking feature of Green Mound, to a person standing in the area from which shells have been removed and looking easterly, is the large shelf-like structure in the northeastern quadrant which juts westerly from the exposed face. We have called this feature a floor but it consists of a series of floors, totaling 4 feet in thickness. Because of the importance of this feature, because the northern portion of the exposed face seemed the easiest in which to work, and because work there would cause but little damage to the total edifice, we concentrated our major tests around this floor. Griffin's 1946 test was also made in this area.

Test I was planned to reveal the ceramic history of this portion of Green Mound. Test II was dug to explore the floor and Test III to check Test I and to secure a larger sample of pottery from the lower (St. Johns I) levels. Tests IV and V were made to determine how far the floor extended in a southerly direction while Tests VI,

Midden Surface
TEST I a
Midden Surface
C 14 Sample GM No. 1
(Unexcavated)
(Unexcavated)
TEST I b
TEST II
Fill
TEST III
C 14 Sample GM No. 5
(Unexcavated)
(Unexcavated)
Sand Cap of Primary Midden Mound
C 14 Sample GM No. 4
Sand Cap of Primary Midden Mound
10′
Sterile Base Sands
Sterile Base Sands
Ash & Crushed Shell
Clay
Humus
Ash - Sand - Clay - Crushed & Burnt Shell
Ash & Burnt Shell
Clam
Burnt Clam
Crushed Clam
Oyster
Burnt Oyster
Coquina
Gray-white Sand
White Sand
Yellow Sand
gs
ws
ys

FIG. 3. PROFILE OF EXCAVATIONS AT GREEN MOUND.

VII, and VIII explored the base of the mound and the underlying sand. The order of presentation of these tests is not the order in which they were excavated in the field.

All depth measurements were referred to the top of Test Ia. This datum proved to be a few feet lower in elevation than that of the remaining top of the mound. Proveniences of specimens will not be covered in this section except in a general way. The vertical distribution of pottery from Tests I-III will be found in Tables 1-3. Location of other specimens is given with their description.

Test Ia

Our main test did not cover the entire life of Green Mound as the top of the existing remnant of the midden is a little higher than the top of this test while the highest part of the midden, presumed to have been in the area of commercial shell removal, may have been even higher in elevation. Consequently, the last phase of aboriginal history at Green Mound is not fully recorded in our tests.

Test I was divided into two parts: Ia, from the highest part of the midden behind the floor down to the top of the floor and Ib, from a point immediately northwest of the floor and slightly above its apparent top down to the base of the midden.

Cleaning the upper face of the midden, we found the shells to be very loosely packed and the section more or less unstable. The

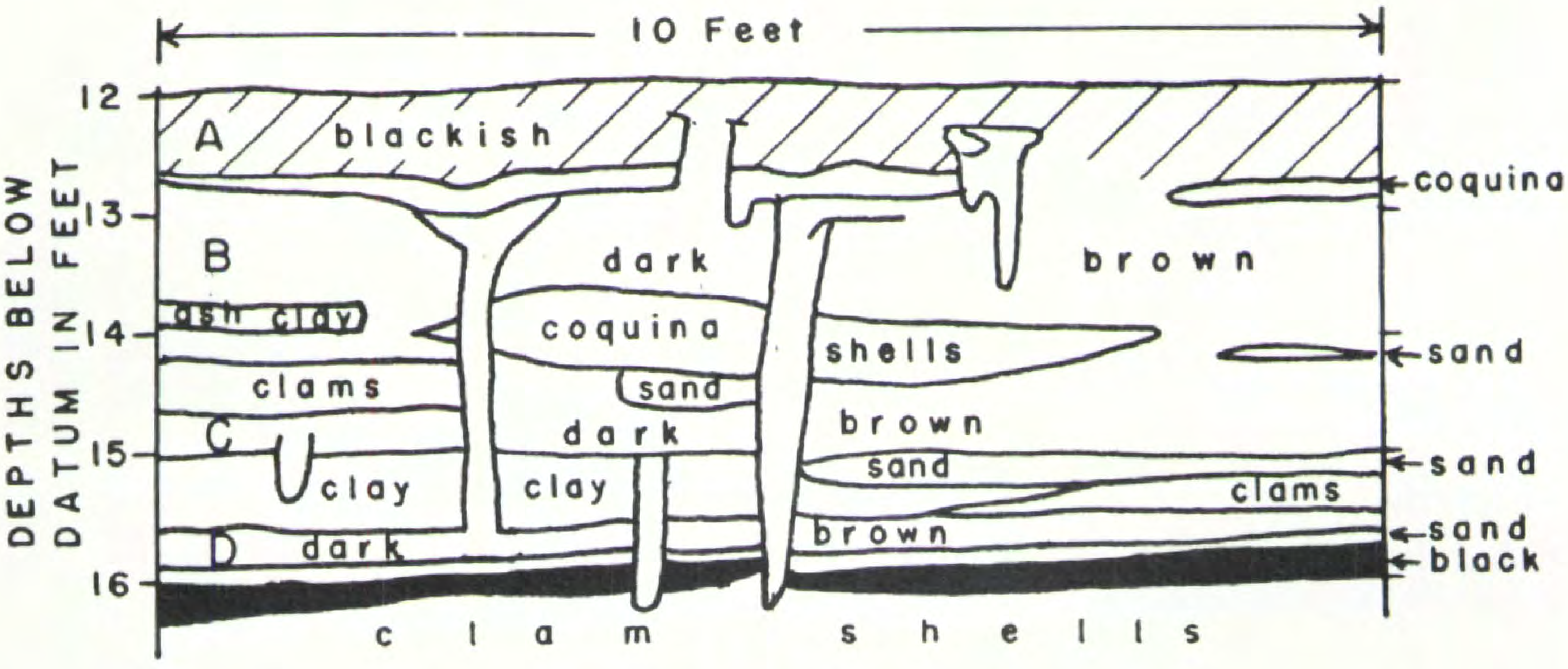
10 Feet
DEPTHS BELOW DATUM IN FEET
12
13
14
15
16
A
blackish
B
dark
brown
coquina
ash clay
coquina
shells
sand
clams
sand
C
dark
brown
sand
clay
clay
sand
clams
D
dark
brown
sand
black
clam shells

Fig. 4. Profile of east face of Test II.

width of the deposit toward the east was very slight. For these reasons, as we did not wish to cause any possible damage to the remaining top surface of the mound, we satisfied ourselves with a sample from the face of Test Ia and did not remove this portion of the test by arbitrary levels. We were extremely careful to be sure our sample came from the prepared face.

These deposits consisted chiefly of loose oyster shells in which were found occasional sherds and food bones. Among the latter were those of turtles, dolphins, drum fish, and sharks. As shown on the profile (Fig. 3), strata sloped downward towards the north. At a depth of 6½ feet was a charcoal impregnated zone about 4 inches in thickness.

In the field all sherds from Test Ia seemed to be made of St. Johns paste, but, after washing in the laboratory, two (Pl. XII, *P*) were classified as Halifax Scored although their paste is somewhat divergent for that pottery type. Sherds from Test Ia are listed in Table 1 as from Test I between depths of 0 and 9 feet. Due to the presence of St. Johns Check Stamped sherds, all of the deposits represented by Test Ia belong to the St. Johns II period.

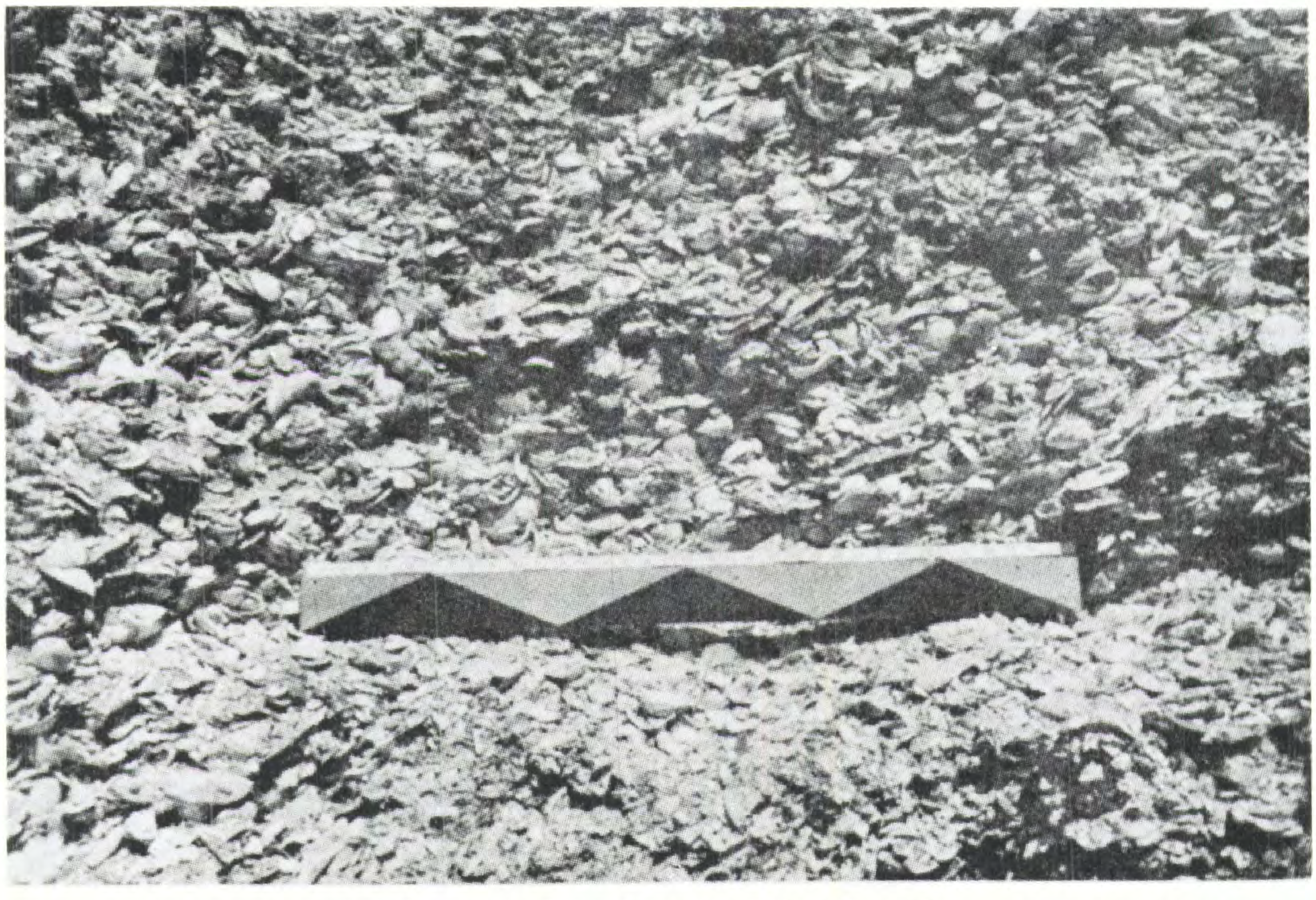

Plate IV. Detail of shell in Test Ib.

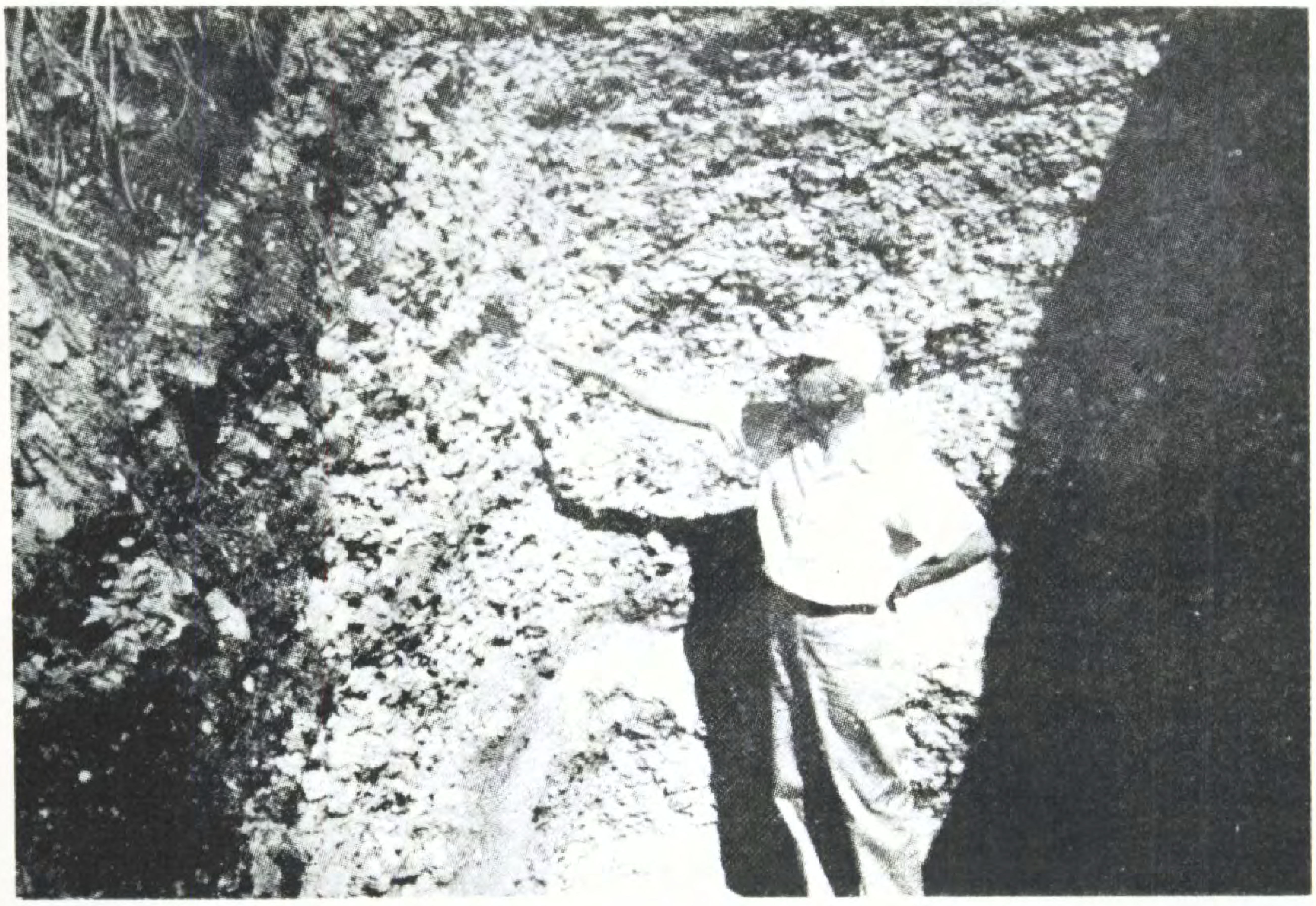

Plate V. Lower part of Test Ib. Shows lower sand, its slope, and the base of the midden.

Test Ib

Material from Test Ib was removed in arbitrary 1-foot levels. The vertical distribution of pottery types, given in Table 1, indicates that check-stamped sherds were not found below a depth of 17 feet. Consequently, lower zones were representative of St. Johns I times while those from a depth of 17 feet and above were representative of the St. Johns II period.

As shown on the profile (Fig. 3) the deposits of Test Ib consisted of layers of shells sloping downward towards the north. Helping in the delineation of these layers was the presence or absence of charcoal (Pl. I). Projecting these layers towards the floor indicated that some of them represented refuse thrown from the floor, apparently at various levels of the floor, and that the lower ones pass, continuously, under the floor (Fig. 3). The 16-17 foot level, the lowest one in which check-stamped pottery was found, corresponded closely with the lowest part of the floor (Pl. III). Consequently, it would seem the floor was started at or very shortly after the beginning of St. Johns II times.

In Figure 3 is shown a sand layer, about 1 foot thick, near the bottom of Test Ib (Pl. V). It sloped downward towards both the north and the west. This layer was also encountered at about the same depth in Test III (Fig. 3; Pl. X) where it sloped downward towards the south and the west. It would appear to represent a sand layer placed by Indians over a relatively small shell mound—a midden accumulation—which should be the earliest part of Green Mound. This sand cap suggests the presence of an earlier floor than the one discussed in this report, one built during middle St. Johns I times. To determine whether such a floor is present would require nearly complete excavation of the remaining northeast part of Green Mound, a sizable undertaking which would seriously damage this historic memorial, but the possibility of an early St. Johns I period floor should be noted.

Shell content from Test Ib as well as other tests at the Green Mound was identical as to species with those encountered at the Castle Windy site (Bullen and Sleight, 1959, p. 18). It is important to note, however, that a difference in species predominance existed, thus:

Shell Species	Castle Windy	Green Mound
Crassostrea virginica Gmelin (Eastern Oyster)	60%	65%
Donax variabilis Say (Coquina)	30%	10%
Mercenaria campechiensis Gmelin (So. Quahog Clam)	5%	20%
Mercenaria mercenaria Linne (No. Quahog Clam)		
Remaining 20 miscellaneous species	5%	5%

Related to the greater predominance of clams is a most interesting feature observed in Test Ib and to a lesser degree in Test III. As stated above, after passing below the 17 foot level, no further check-stamped sherds were encountered. Likewise, after passing below the 17-foot level, oysters were seldom found in the midden material. Clams apparently formed the bulk of the diet at this period for the Indians of the Green Mound site.

TABLE 1. VERTICAL DISTRIBUTION OF POTTERY, TEST I

Depths in feet	0-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	Totals
St. Johns Check Stamped																		
Large (2-4 per inch)	9		1															10
Medium (5-7 per in.)	19	4	15	2		2	3	5	1									51
Small (8-12 per in.)	2		6			1		1										10
Linear	7	1	9	1			6[b]	1										25
Diamond-shaped		3		1				1										5
Punctated over checks	1		1															2
Scored over checks	7	2	2															11
St. Johns Scored	5	1	19					2		1	1					2		31
St. Johns Plain																		
Rough surface	9	3	15	7	1	4	2	3	2	7	20	9	17	9	4	3	4	119
Smooth surface	1	1	1	2	1[a]								2					8
Halifax Scored	2																	2
Halifax Plain		1				1		4										6
Totals	62	16	69	13	2	8	11	17	3	8	21	9	19	9	4	5	4	280

[a] Red-painted interior

[b] Linearity exceptionally noticeable

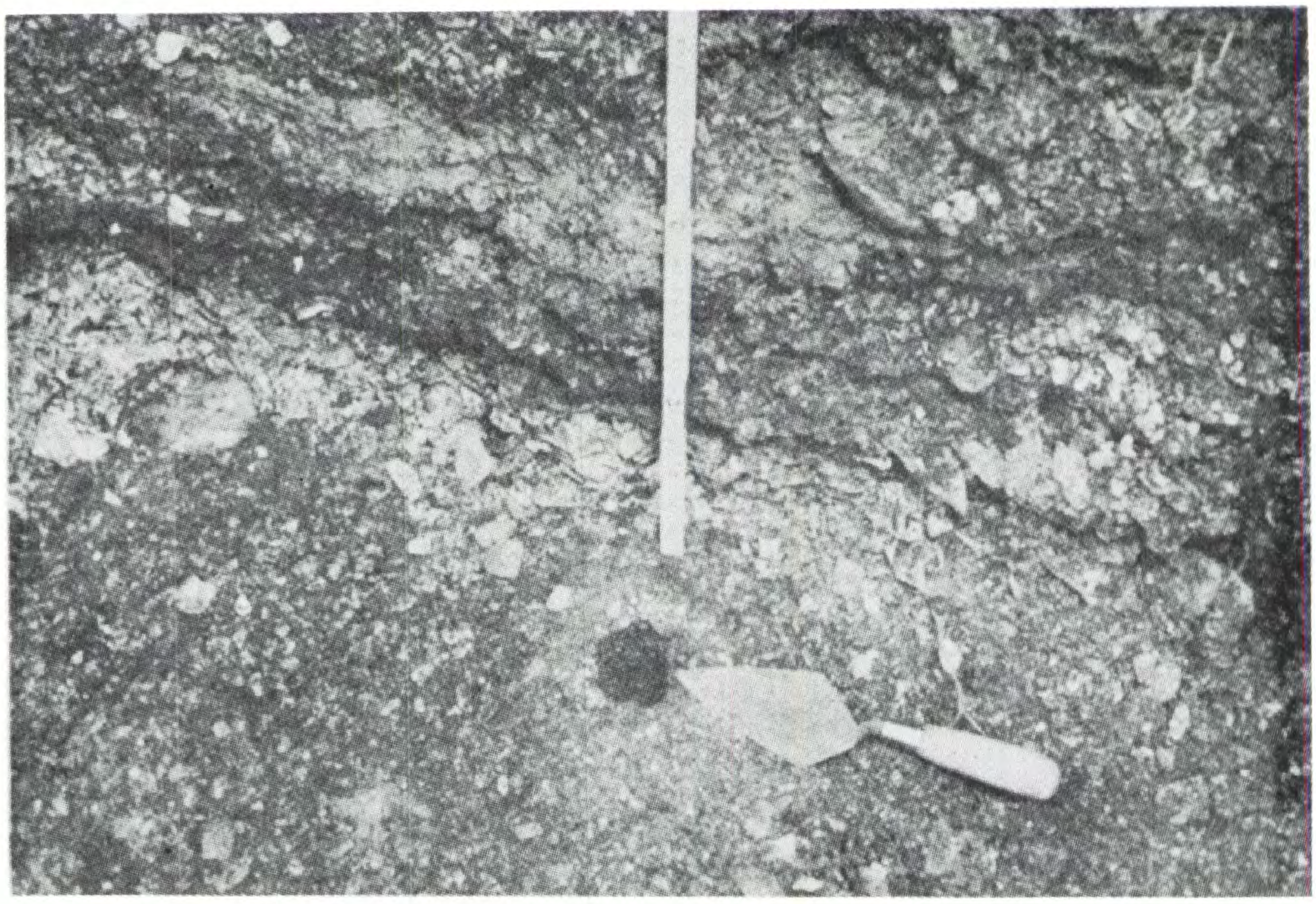

Plate VI. Detail of floor in Test II. Shows open post hole.

Plate VII. Excavating Test II (floor). Post holes to left, upper sand (builder's fill) to right. Ripley P. Bullen (left) and Frederick W. Sleight (center) examine post holes.

Mixed with the shells of Test Ib were the sherds mentioned earlier and listed in Table 1, various food bones, discarded shell and bone tools, and charcoal. Prominent among food bones were those of fishes and turtles. Less common were bones of birds, sharks, and dolphins. Five deer bones were found which were limited, in the excavated area, to higher zones. Three crab claws were also present.

A collection of charcoal for radiocarbon dating was taken from the lowest strata of Test Ib. This sample (GM No. 4) came from between depths of 23 and 24½ feet and was secured by picking bits of charcoal from among shells found between the bottom of the lower sand layer and the base of the midden. Results of the dating of this charcoal will be discussed in a later section.

Below the midden was a coarse, yellowish beach sand (Pl. V).

Test II

An area, 2½ feet east-west and 10 feet north-south, was carefully excavated in the "floor" which proved to be an extremely complicated feature. An idea of this complexity may be gleaned by an examination of Plates VI-IX. Figure 4 is a slightly simplified profile of the east wall of our test showing several post holes and major lenses or layers. The west wall of this test is included in Figure 3. Vertical distribution of pottery from this test is given in Table 2.

The floor is extremely hard to describe. Trowelling produced a bewildering array of lenses of ashes, fish bones, clay, sand, and other debris—sometimes stained by red ochre—crushed or burned shells, many food bones, and some sherds, all compacted together by trampling abetted by some cementing action from the burned shells and from the clay.

These deposits tended to concentrate into zones as shown in the east profile (Fig. 4) where a blackish superior deposit was separated from the "main" dark brown deposit by a zone of coquina shells. The main dark brown deposit was divided at a depth of about 14 feet into an upper and lower portion by clay and ashes, coquina, and sand lenses. Deeper was a clay-sand deposit whose top was very level. Below this was another dark brown "floor" which rested on sand. These horizontal zones were cut by vertical post holes several of which are illustrated in Figure 4 while others are shown in Figure 3 and Plates VIII and IX.

A minimum of four "floors" seem to be represented in the profile (Fig. 4). These we have lettered *A-D.* Post holes are clearly shown to lead downward from two, possibly three, elevations. One of these was between depths of 12 and 13 feet and the other around 15 feet. These are the same depths from which post holes appeared to originate in the west profile (Fig. 3, Pls. VI-IX). More post holes were found in the north face (not illustrated). They led downward from "floor" C.

The whole feature was underlaid by sand (Fig. 4) which must have been placed there by Indians (Pl. VII, lower right center). From the levelness of the top of this sand deposit and its variable thickness, it is believed this sand was "builder's fill" brought to the mound and used by Indians to level off the top of the then existing shell midden to form a level platform for habitation. Intense occupation resulted in the dark brown "floor" deposits. Periodically, as at elevations of 15½, 14, and 12½ feet, clay, sand, or coquina shells were spread over the floor as it continued to build upwards. This may have been done for sanitary reasons.

During this fairly long period of intensive use, structures of some kind, as evidenced by post molds, were constructed on this floor. In some cases posts stood in the floor while debris accumulated around them.

Post holes were 2½ to 4 inches in diameter. In one case, where it had been covered by a clam shell, we found an empty post hole (Pl. VI) but otherwise they were filled with debris or sand. Most post holes had parallel sides and blunted ends but one, four inches in diameter and 9 inches long, ended in a flat bottom. Another was funnel-shaped. Filled with very black dirt, it measured 9 inches vertically while its sides contracted evenly from a 4-inch diameter mouth to a 1-inch wide bottom.

In one place, at a depth of 12½ feet, six post holes approximately surrounded a lens of white sand which was 12 inches east-west and 18 inches north-south. Immediately below this sand were a great many fish bones. Again at a depth of 14½ feet, five post holes, spaced about a foot apart, formed an arc. They led outside our excavation but if the arc were projected it would represent a circle about 10 feet in diameter.

TABLE 2. VERTICAL DISTRIBUTION OF POTTERY, TEST II

Depths in feet	12-13	13-14	14-15	15-16	16-17	17-18	18-19	Totals
St. Johns Check Stamped								
Large (2-4 per inch)					1			1
Medium (5-7 per inch)	26	3	6	4	1			34
Small (8-12 per inch)	2	3		1				6
Linear	2							2
Diamond-shaped	4	3	1					8
Scored over check	2	3						5
St. Johns Scored	8			1		1	1	11
St. Johns mat-marked		2						2
St. Johns Plain								
Rough surface	29	24	14	27		9	6	109
Smooth surface	5	5	3	1		1		15
Little Manatee Shell Stamped		3						3
Belle Glade Plain	1						2	3
Halifax Plain	1			2				3
Plain, sand-tempered					6			6
Totals	74	46	24	36	8	11	9	208

At a depth of 12½-13 feet, 9 inches below the apparent top of the floor, numerous unidentified charred seeds were uncovered. They measured almost ½ inch in length and ¼ inch in width. With rounded ends and circular cross section, they had a very small longitudinal hole in their centers.

Several features other than postholes were also uncovered in this floor. One consisted of a clay lens which was oval, 28 by 32 inches, and about 3 inches thick. A sand lens surrounded by post holes has been mentioned. A small hearth, 24 by 32 inches across and 7 inches deep, was filled with white sand to a depth of 4 to 5 inches. It was lined with charcoal and in the bottom, mixed with this charcoal, were *Tagelus* shells. In another place a thick lens of charcoal led into the bank beyond the limits of our test. It was 5 inches thick in the middle and covered an area 42 inches across and at least 5 feet long. Charcoal was taken from this deposit, which was located at a depth of 15½-16 feet below datum and 3 feet 9 inche below the apparent top of the floor, for radiocarbon dating.

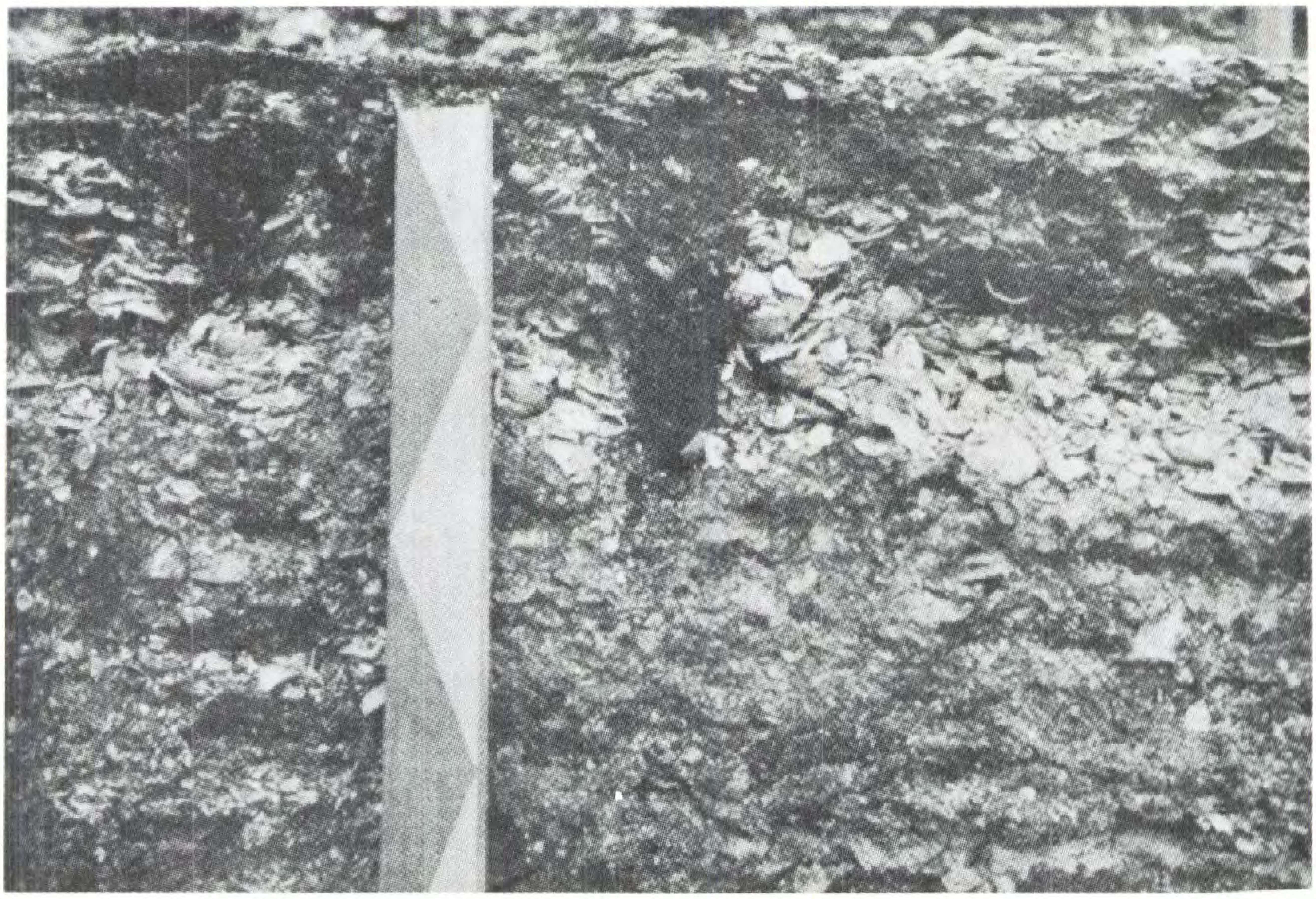

Plate VIII. Detail of post hole in floor (Test II).

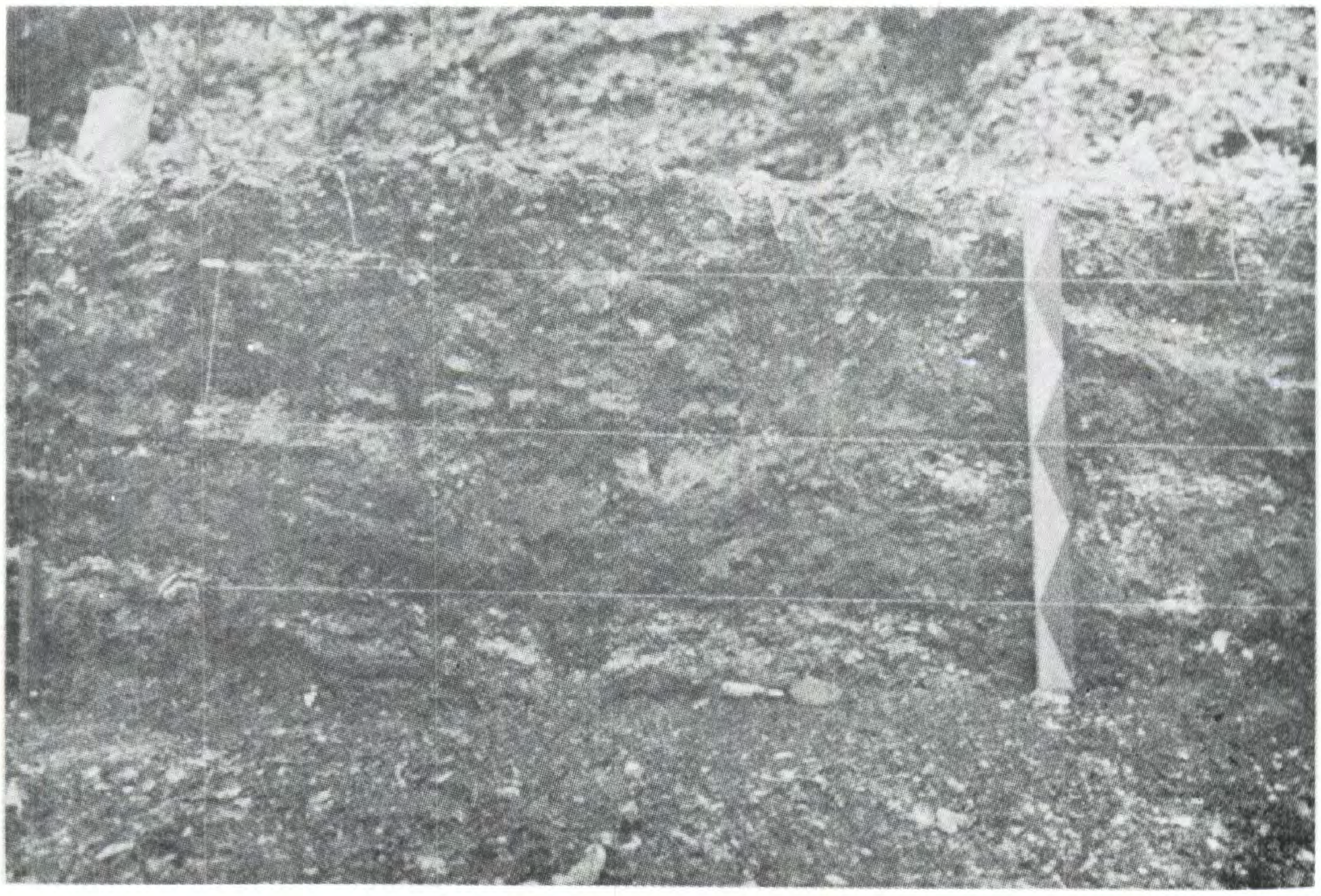

Plate IX. Face of Test II showing floors and clay zones cut by post holes.

Test II was carried downward below the floor until it was certain that we were excavating in deposits laid down before the introduction of check-stamping at Green Mound. Such deposits were encountered at a depth of 17 feet while only two St. Johns Check Stamped sherds were found in the 16 to 17 foot level. It would appear, therefore, that the floor was started almost immediately after the introduction of check-stamping and that the charcoal taken from the floor for dating was deposited only a short time after the establishment of this floor. Hence, the date of this charcoal (GM No. 5), A.D. 840 ± 160 years, indicates approximately both the time when check stamping was introduced and when the construction of the "first" floor started.

Test III

As shown in Figures 2 and 3, Test III, covering an area 4 by 6 feet, was made a short distance south of the test in the floor. It was dug primarily as a check on Test I, to further delineate the division between St. Johns I and St. Johns II deposits, and to secure a larger sample of known St. Johns I ceramics and other artifacts.

A local datum was established and later tied into our main profile. The test started about a foot below the bottom of the sand layer which was directly below the floor and which, conveniently, extended southward across the top of Test III (Pl. X). As we took this sand layer to mark the establishment of the floor and to have been deposited at the time of the transition from St. Johns I to the St. Johns II period, we did not anticipate finding any check-stamped pottery in Test III. As anticipated, no check-stamped pottery was found (Table 3) and all the deposits penetrated by Test III may be assumed to have been laid down by Indians before the close of the St. Johns I period.

The highest 4 feet of Test III consisted chiefly of oyster shells plus some coquina shell and a few lumps of charcoal. At about 3½ feet below the start of this test (19 feet below the top of the mound) we encountered a sand layer, 4 inches in thickness, which sloped downward towards the west. Below this sand layer, oyster, coquina, and clam shells formed the bulk of the debris until, at a depth of 23 feet, we came down upon another sand zone. This one sloped downwards towards both the west and the south. It is believed to

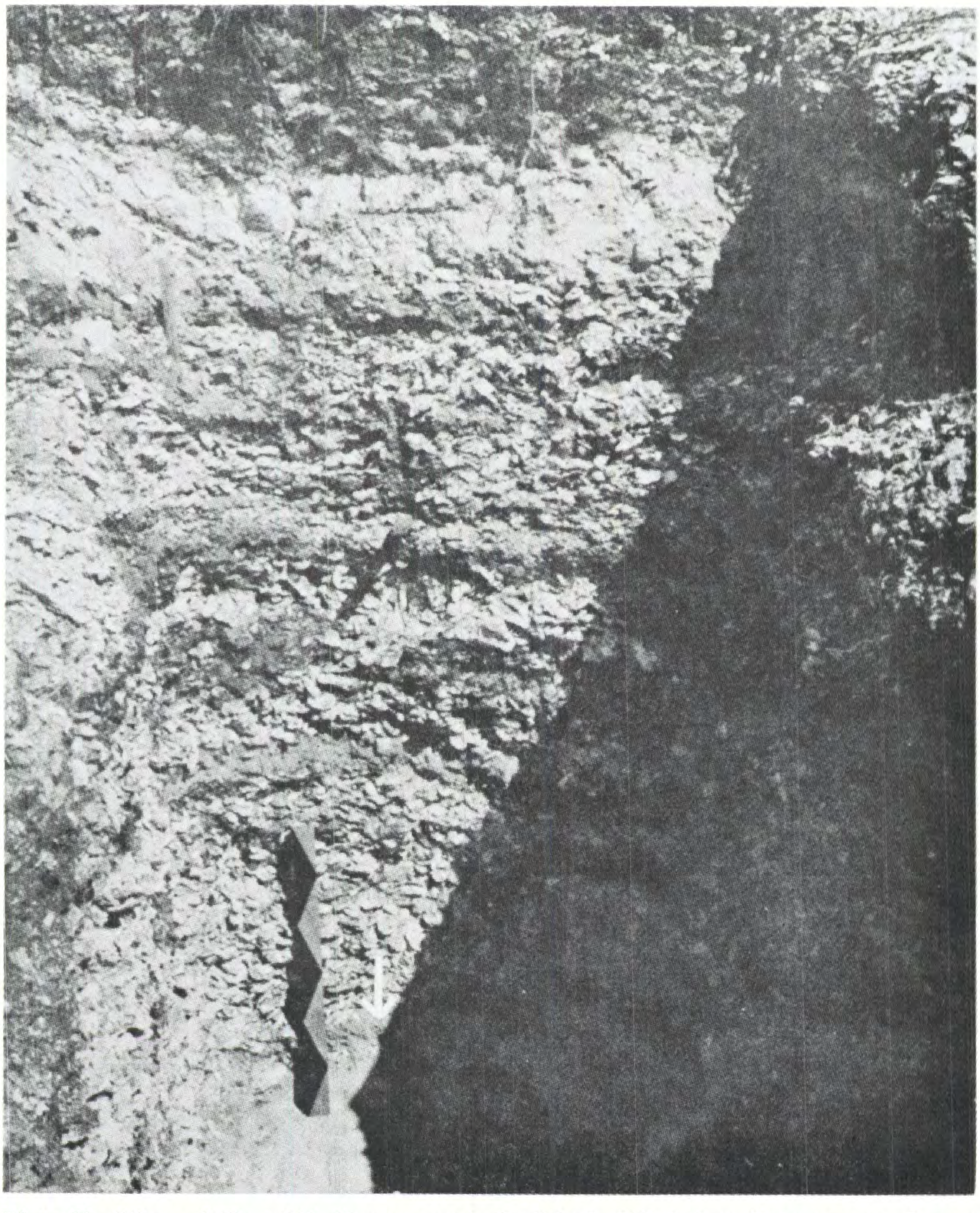

Plate X. View of Test III. Upper sand (builder's fill) below floor at top. Lower sand with slope indicated by arrow.

be the same sand layer as that found near the bottom of Test Ia. There it occurred between depths of 21½ and 23½ feet while in Test III these depths were 22 and 23½ feet (Fig. 3).

Below this lower sand layer, clams dominated the deposit until the sterile underlying yellow-brown sand was met at a depth of nearly 25 feet. A small hole, dug into this sand, showed it to be coarse, brownish, beach sand which seemed to be even coarser at a depth of 2 feet below the base of the midden. At 3 feet, where digging stopped, this sand suddenly became dark brown in color.

Artifacts from Test III, other than St. Johns Plain sherds (Table 3), include a small sandstone plummet and various broken *Busycon* tools.

TABLE 3. VERTICAL DISTRIBUTION OF POTTERY, TEST III

Depths in Feet	18-19	19-20	20-21	21-22	22-23	23-24	24-25	Totals
St. Johns Scored				1				1
St. Johns Plain								
Rough surface	5	25	35	13	15	15	60	168
Smooth surface	1	2	2	1	1			7
Plain, sand-tempered			1			7	10	18
Totals	6	27	38	15	16	22	70	194

Test IV

Test IV was dug to find out if the floor extended as far south as the location of this test (Fig. 2). A sand layer, 19 inches in thickness, was found at approximately the same elevation as the floor. However, the debris on top of this sand layer consisted of recent talus and we were unable readily to penetrate far enough into the mound to determine whether or not there was a deposit like that of the floor on top of this thick sand. Hence, Test V, further to the south, was started.

Test V

At Test V (Fig. 2), deposits which appeared to be of the same nature as those of the floor were found at an elevation a little lower than that of the floor to the north. There was, however, no underlying layer of sand at the location of Test V. Unsuccessful attempts were made between Tests IV and V to check these points further but the thickness of the talus overburden made work prohibitive.

Data from Tests IV and V suggest that the floor-like deposit extends at least 125 feet north and south in Green Mound and that it was approximately level over most of this distance. At the northern end, at least, structures of some kind were built on this floor. All of this represents a great deal more construction than is usually attributed to coastal shell heaps.

Test VI

Test VI was an exploratory test, started early during our work at Green Mound, to investigate the base of the mound in front of the talus near the middle of the present face (Fig. 2). Eighteen inches of shells and black dirt were found to lie on the coarse brown sand which formed the base upon which the midden had accumulated. At least the top 8 inches, possibly all, of this deposit was disturbed. Sherds of St. Johns Check Stamped pottery were found throughout while a grooved net weight (Pl. XII, *1*), made of coquina rock, was found in the lowest 6 inches.

Digging below the base of the midden disclosed coarse brown sand for the first 2 inches, coarse yellow-brown sand for the next 12 inches, and then a 3-inch thick band of black brown sand. Below this was gray sand to an undetermined depth. These color changes are the results of soil-profile forming processes—leaching and deposition by perculating water—which are undoubtedly different below the midden than they are off to one side where the midden is not present.

Test VI was extended easterly into the face of the talus and, subsequently, widened after undisturbed midden deposits of the mound were at our disposal. Extension 3, North, is of considerable interest.

Here a sand zone, 4 to 5 inches thick, divided the midden into an upper and a lower part. Above the sand, coquina shells were more plentiful than oysters while below oyster shells and animal bones were more common. There was also a difference in pottery as in Test Ib. Above the sand we found a Belle Glade Plain, a

Halifax Plain, a St. Johns Scored, 17 St. Johns Check Stamped, and 47 St. Johns Plain sherds as well as a piece of cut shell. Below the sand were 51 St. Johns Plain sherds, 2 pieces of cut bone, and 2 broken *Busycon* tools but no check-stamped pottery. Test VI, Extension 3, North, was a fourth location where we penetrated St. Johns I deposits underlying those of the St. Johns II period.

Test VI was located a little further west than were Tests III, IV, and V. The sand zone in Test VI, which marked the division between St. Johns I and II, sloped downward towards the west. As this sand is undoubtedly part of that brought to the midden by Indians when they leveled off the midden preparatory to the initial construction of the floor—this must be the case because it marked the division between St. Johns I and II deposits—the area used for the floor must have been only the eastern part of the present mound which was then very subsubstantially smaller than it would appear to a viewer to-day. Also, the downward westerly slope of this sand layer implies that all the western three-quarters of the mound, mostly removed for commercial purposes, is or was St. Johns II in date and that only the lower part of the remaining eastern portion is St. Johns I in date.

Test VII

This test was made a short distance to the west of Test Ib as a check to be sure that undisturbed deposits would not be buried by spoil from Test 1b (Fig. 2). It disclosed 11 inches of disturbed and trampled shells and black dirt on top of the underlying coarse beach sand. This sand was light brown in color for a depth of 30 inches at which point it became dark brown.

Test VIII

This small test, the first one we dug, was made to eliminate from further consideration the large, more or less central, area from which shells had been removed for commercial purposes (Fig. 2). Retrampled midden materials, 11 inches thick and containing St. Johns Check Stamped pottery, a circular grinding stone made of coquina rock, 4 inches in diameter and 1 3/8 inches thick, and three broken *Busycon* tools, were found to rest on coarse beach sand. The latter was gray in color for 14 inches, then blackish-brown for 6 inches, red brown for 9 inches, and then yellow-brown for at least the next 20 inches. The colors of the coarse sands underlying Green Mound are very variable.

SPECIMENS

Specimens from our excavations are illustrated in Plates XI-XIII. The vertical distribution of pottery types is given in Tables 1-3. The provenience of other specimens is given below along with their description.

Pottery

Pottery from Green Mound consists nearly exclusively of sherds of the St. Johns Series. Out of six hundred eighty-two sherds from our three major tests, 94.4 per cent are of St. Johns paste, 1.6 per cent of Halifax paste, and 4.0 per cent of other sand-tempered pastes. However, as explained below, the paste of St. Johns Series sherds from Green Mound is extremely hard and, with depth in the mound, becomes more sandy so that a point is reached when it becomes a matter of judgement as to whether sherds are classified as of St. Johns paste or of a sand-tempered paste.

St. Johns Plain

As mentioned above, St. Johns Plain sherds are made of a paste which represents the hard end of the range of chalky ceramics. Large sherds have a clear, sharp ring when struck together. In lower levels, especially towards the bottom of Test III, some of these sherds are noticeably sandy and have been listed in the pottery tabulations as "Plain, sand-tempered." These sherds are not as sandy as are those of the Deptford or Halifax Series but are made of a paste very similar to that of the Belle Glade Series.

The outer surfaces of St. Johns Plain sherds are, in general, poorly smoothed and frequently exhibit deep surface cracks, fingers or thumb indentations, and surface bumps (Pl. XI, *I*). Below a depth of 17 feet in Test I, some of these sherds exhibit scraping (as opposed to scoring) marks. Sherds from the lowest 3 feet of this test have faceted outer surfaces like those found on Belle Glade Plain sherds. This faceting also occurs on the "Plain, sand-tempered"

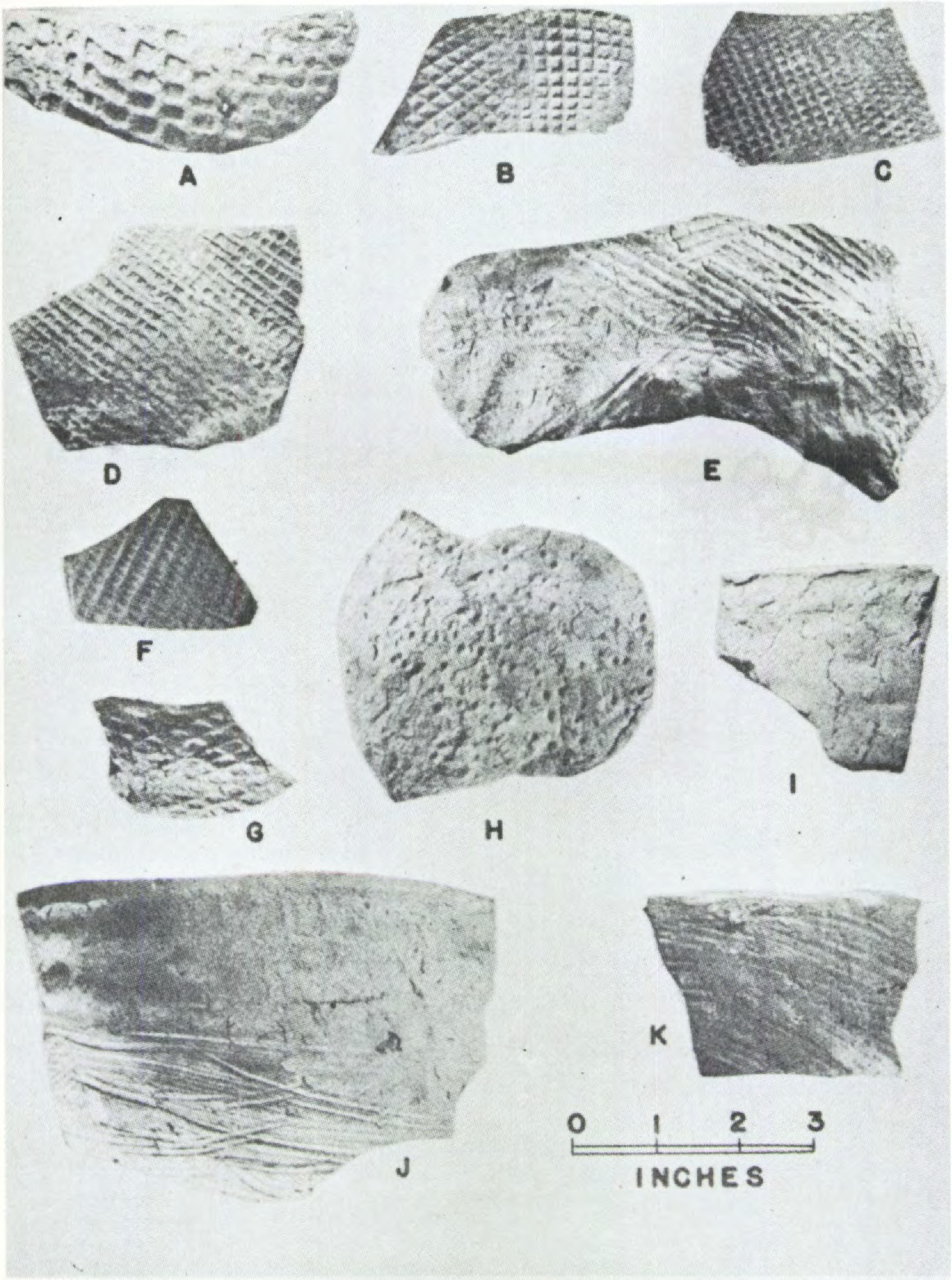

Plate XI. St. Johns Sherds.
A-G, St. Johns Check Stamped (*A,* large; *B,* medium; *C,* small; *D,* linear; *E,* scored over check-stamped; *F,* linear; *G,* diamond); *H,* punctated over check-stamping; *I,* St. Johns Plain, rough surface; *J,* very large check stamp near rim, scored near base; *K,* St. Johns Scored.

sherds found between depths of 16 and 17 feet in Test II (Table 2). Similarly, in Test III, sherds between depths of 19 and 21 feet exhibit scraped or faceted outer surfaces while those from between 21 and 23 feet include many with dragged surfaces like those found on Belle Glade Plain sherds.

Scoring of outer surfaces is described below under St. Johns Scored but it is probably merely a surface treatment and not a decoration and hence might logically have been included here.

Inner surfaces frequently exhibit fine smoothing marks which have not been removed but in general inner surfaces are extremely smooth, almost burnished. Sometimes they appear to have been subjected to a clay wash.

This general excellence of inner and poorness of outer surfaces seems to be a characteristic of St. Johns ceramics from the top to the bottom of Green Mound, i.e. during both the St. Johns I and St. Johns II periods.

St. Johns Check Stamped

Check-stamped sherds from the Green Mound seem to include the whole range of variations in check-stamping. For ease of analysis and comparison, they have been divided in the pottery tables into large (2-4 checks per inch), medium-sized (5-7 checks per inch), small (8-12 checks per inch), linear, and diamond-shaped check-stamped impressions (Pl. XI, *A-G*). Relative amounts of these variations will be found listed in Tables 1 and 2. As noted there, scoring and sometimes punctation occurs over check-stamping.

In general, check-stamping is not neatly done. Examples found between depths of 10 and 16 feet in Test I are a little better made than are check-stamped sherds from shallower depths. Inner surfaces of check-stamped sherds, like those of St. Johns Plain sherds, are very well smoothed, occasionally burnished, and perhaps subjected to a clay wash.

Dominantly, the paste of St. Johns Check Stamped sherds is very hard like that of St. Johns Plain sherds described above. However, it was noted during classification of these specimens that 10 per cent of those from the highest 9 feet of Test I were of a softer paste than is otherwise typical of the site.

St. Johns Scored

Scoring occurs on a fair number of sherds from the Green Mound. In some cases marks suggest blunt, two-pronged tools (Pl. XI, E, J). The edges of sea shells or of carved wooden paddles may have been used as scoring tools. Scoring marks are shallow and usually a tenth of an inch or less in width. They are, on the average, approximately parallel with each other but also occur in a criss-cross manner.

Undoubtedly, these marks were left by tools used to work the outer surfaces, to reduce the thickness of walls, and to shape the outsides of vessels. In some cases they occur, apparently, over all the outside surfaces of vessels (Pl. XI, *K*). In other cases they are limited to the bottoms or lower parts (Pl. XI, *J*). In several instances they, in part, over-ride check-stampings and consequently were done after the application of stamped imprints.

St. Johns Punctated

No examples of St. Johns Punctated sherds were found. The closest is the basal portion of a vessel which has randomly applied punctations reminiscent of Lochloosa Punctated (Pl. XI, *H*). This sherd also bears a few scraping marks and check-stamped imprints. The scraping marks and probably the punctations were added after the check-stampings.

Other St. Johns Series Sherds

Two St. Johns mat-marked sherds (Pl. XII, *L*) and three Little Manatee Shell Stamped sherds (Pl. XII, *M*) from Test II need no special comment.

Found while cleaning the face for Test II and probably belonging chronologically to the same levels as those mentioned in the previous paragraph, are four unique sherds. One has a red-painted interior. Another (Pl. XII, *O*) would be called Weeden Island Incised if made of a sandier paste. The third (Pl. XII, *N*) is marked with the edge of a sea shell, apparently an *Arca ponderosa* shell. From the shape of this sherd, it came from a small flat-bottomed jar. The fourth (Pl. XII, *K*) has a highly burnished outer surface which appears to have been painted a red (now darkish brown) color. Immediately below the outer lip is a double row of peculiarly-shaped punctations carefully made by a drag-and-jab technique.

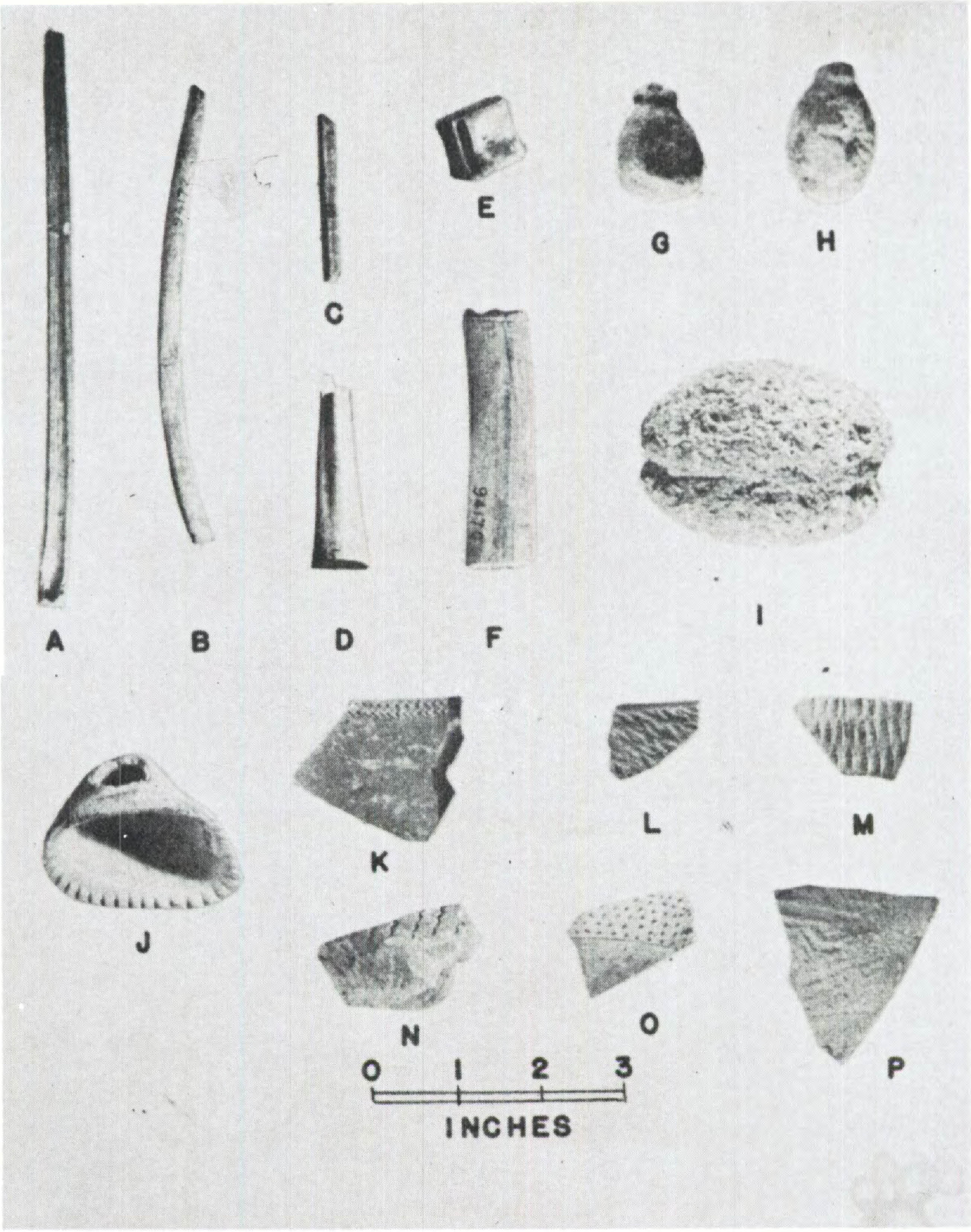

Plate XII. Artifacts of Bone, Stone, Shell, and Clay.

A-C, fragments of bone pins; *D,* fragment of bone awl; *E,* worked shark vertebra; *F,* bone handle; *G-H,* sandstone plummets; *I,* coquina net-weight; *J,* perforated *Noetia* shell; *K-P,* sherds (*K,* unique punctated; *L,* St. Johns net-marked; *M,* Little Manatee Shell Stamped; *N,* miscellaneous shell-marked; *O,* Weeden Island Incised-like; *P,* Halifax Scored).

These unique sherds are made of a paste similar to that of the St. Johns Plain pottery from Green Mound and, hence, do not seem to represent trade wares. Their technical excellence is a measure of the competence of St. Johns potters. Apparently, they wasted no skills on domestic culinary wares.

Sand-tempered Sherds

Examination of the pottery distribution tables will indicate that a few sand-tempered sherds were found irregularly scattered throughout the midden. Mention has been made under the description of St. Johns Plain pottery of some of these sherds from lower levels which were too sandy to be included under the St. Johns Plain designation. Similarly, mention has been made of Belle Glade-like surfaces found on some of the St. Johns Plain containers. Only three of the sherds, all from Test II, were clearly Belle Glade Plain but the presence of Belle Glade Plain features on otherwise St. Johns Plain sherds should be noted.

Nine sherds contained enough quartz sand to be classified as Halifax Plain. The quartz sand in the two sherds classified as Halifax Scored (Pl. VIII, *P*) is very fine, much finer than is usually the case with pottery of the Halifax Series.

Shell Artifacts

Shell tools from our excavations at the Green Mound consist of a perforated *Noetia* shell (Pl. XII, *J*), found at a depth of 15 feet in Test II; four cut or sawed *Busycon* shells or shell fragments; and 16 broken or battered *Busycon* tools. The last were irregularly distributed below a depth of 9 feet down to the bottom of the midden. They were a little more common in St. Johns I than in St. Johns II deposits. Their absence in the highest 9 feet is undoubtedly fortuitous and not significant.

It is interesting to note that all *Busycon* tools were made from the heavy *Busycon perversum* Linne, formerly *B. carica eliceans* Montford and none from the lighter weight *Busycon contrarium* Conrad.

Bone Artifacts

About a dozen whole or fragmentary examples of worked bone were found of which six are illustrated in Plate XII. While clearing the face of the midden of slump material from undetermined levels, an interesting double grooved bone pin was recovered (Pl. XIII).

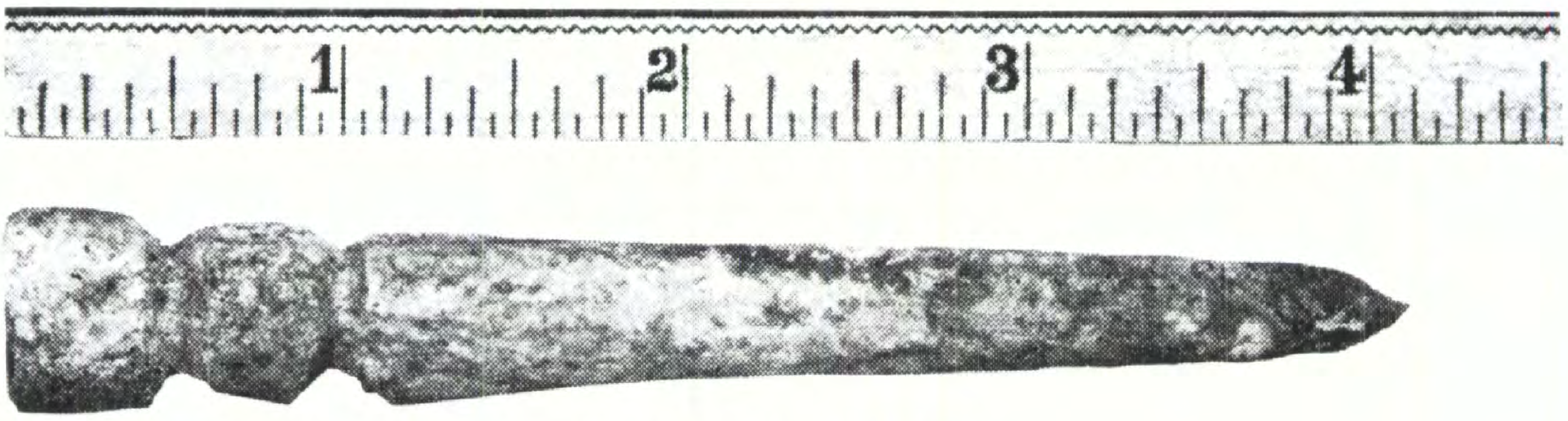

Plate XIII. Bone pin.

From Test I, between depths of 9 and 10 feet, came part of a bone pin (Pl. XII, *C*) and, between depths of 15 and 16 feet, a worked shark vertebra (Pl. XII, *E*). Sides of the latter have been "dug" into. Shapes and sizes of the cavities suggest the use of a fingernail or similar tool.

Test II, cutting through the floor, was more productive. From depths of 12 to 13 feet came a bone handle (Pl. XII, *F*), a fragment of a bone awl, a piece of cut fish bone, and the head of the right femur of a raccoon from which the shaft had been cut off. The handle had been sawed and broken off at both ends. As the interior is much larger at one end than at the other, it would have been easy to haft a tool with a tapering tang into this handle. Between depths of 13 and 14 feet were parts of a long bone pin made from a rib bone (Pl. XII, *B*). In the next lower foot were the rib of a large animal, possibly that of a bear, exhibiting stone knife marks such as might have been made in removing meat, and most of a long, well made, bone pin (Pl. XII, *A*).

In Test III, between depths of 18 and 19 feet, was the upper part of a flat-topped bone pin (Pl. XII, *D*) and a piece of unidentified, partially fossilized, bone which was battered and partially burnt.

Bone specimens from Tests I and II came from St. Johns II deposits while those from Test III are referable to the St. Johns I period.

Stone Artifacts

A broken coquina muller or disc with flat sides and rounded edges, about 1¾ inches thick and 4 inches across, came from the disturbed uppermost 6 inches of Test VIII. It undoubtedly came from deposits of the St. Johns II period.

Another coquina tool is a grooved net weight (Pl. XII, *I*) found in the lowest 6 inches of the first part of Test VI. As two sherds, of which one is check-marked, were associated with this net sinker, it may be assigned to the St. Johns II period.

Part of a limestone ball, originally about 2 inches in diameter, was found between depths of 14 and 14½ feet in Test II. A crude ball of sandstone or sandy limestone was also found while cleaning the face of the floor area. Both may be assigned to early St. Johns II times.

Two plummets complete the inventory of stone specimens. Both are small, one 1 3/8 and the other 1½ inches in length; made of a coarse, friable sandstone; and similar in shape with one flattened side. The first (Pl. XII, *G*) came from a depth of 16 feet in Test II. It must be early St. Johns II in date. The other (Pl. XII, *H*) came from the lowest foot of Test III (between depths of 23 and 24 feet) and must belong to a middle if not early St. Johns I period.

FOOD REMAINS

Green Mound is, or was, a tremendous kitchen-midden or refuse pile upon which Indians lived, probably intermittently, while the mound was accumulating. Most of the bulk of the mound was formed by shell discarded after the animal was eaten.

The most common shells, by far, are those of oysters. Next in importance are clam and then coquina shells. Examples of nearly all other sea shells native to the region were also found but they were much less frequent in occurrence.

Unidentified fish bones were extremely common. The finding of only two sting ray spines suggests such fish were not among those commonly collected for food. Bones of the bottlenose dolphin, of sharks, and of turtles were common. Next in frequency were bird bones and crab claws. The last three species in order of frequency were deer (17 bones), opossum (9 bones), and raccoon (2 bones).

This inventory clearly reflects the littoral location of Green Mound. Land animals were apparently rarely eaten by Indians while living at Green Mound.

Bird bones were relatively abundant. Some of them represent species which only winter in Florida and are not present during the rest of the year. In one case, that of a Razor Bill Auk, we have the first known record for Florida as this bird is not otherwise known further south than South Carolina. The following listing is taken from a report on the identification of the bird bones prepared by J. Hill Hamon, a Graduate Student at the University of Florida, under the supervision of Dr. Pierce Brodkorb of the Biology Department, University of Florida.

TABLE 4. IDENTIFIED BIRD BONES FROM GREEN MOUND

Common Name	Latin Name	Number of Bones	St. Johns Periods	Winter Visitors	Northern Species
Loon	*Gavia immer*	6	Late I, Early II	x	
Gannet	*Morus bassanus*	1	Late Early I	x	
Double Crested Cormorant	*Phalacrocorax auritus*	6	Late I, Early II Late Early II		
Duck, sp.	*Anas,* sp.	1	Late Early II	x	
Black Brant	*Branta bernicla*	1	Late Early II		x
Turkey Vulture	*Cathartes aura*	1	Late Early II		
Razor Bill Auk	*Alca torda*	1	Late Early II		x
Herring Gull	*Larus argentatus*	11	Late I, Early II Late Early II	x	
Black Back Gull	*Larus marinus*	4	Early II, Late Early II		x
Glaucous Gull	*Larus hyperboreus*	1	Late Early II		x
Laughing Gull	*Larus atricilla*	1	Early II		
Willet-like	*Limicolae* indeterminate	2	Late I, Late Early II		

Of the twelve species listed above, four are northern forms, rarely if ever coming as far south as Green Mound to-day even in the winter, and four are winter visitors not found in Florida in the summer. Certainly people were living at Green Mound in the winter. It will be also noted from the above that the northern forms concentrate in what we have designated as late early St. Johns II times. It may be suggested that during a late part of the early St. Johns II period the climate was a little cooler than now. We would estimate that such a cooler period probably occurred around A.D. 900-950 based on our interpretation of available radiocarbon dates.

CHRONOLOGICAL DISCUSSION

Our excavations at Green Mound confirmed Griffin's work at the same site by demonstrating stratigraphically that deposits of the St. Johns II period, characterized by check-stamped pottery, overlay those of the St. Johns I period during which pottery was undecorated, unless scoring be considered decoration.

We penetrated the point at which check-stamping first appeared in four stratigraphic columns with satisfying consistency. We did not find evidence of any change in the material culture of Indians of the St. Johns II as opposed to those of the St. Johns I period except in respect to the decoration of pottery and shell fish economy.

There was an apparently radical innovation which occurred at the beginning of St. Johns II times. We refer to the leveling of the top of the St. Johns I debris, the bringing to this surface of substantial amounts of sand which was used as "builder's fill", and the construction on this prepared surface of various structures. Sand "caps" were found in lower (St. Johns I) levels and have been reported for other shell middens as have post holes but nothing approaching the magnitude of the "floor" in the northeastern part of Green Mound has been previously reported for a Florida shell midden.

Construction of this floor resulted in a flat, probably more or less rectangular, area which is suggestive of the top of a temple or ceremonial mound. We feel that such is not the correct interpretation for three reasons: 1, the date would appear to be too early for a temple mound; 2, the deposits which we tested are certainly those resulting from intensive occupation consistent with a location where meals were prepared over a great many years; 3, these deposits were eventually buried by accumulating debris and not left open as is usually the case with the tops of temple mounds.

In terms of ceramics there are minor variations with time which may be summarized briefly. Virtually all sherds from Green Mound were made of a hard St. Johns paste but sherds from the lowest levels were more sandy while 10 per cent of the check-stamped sherds from the highest 9 feet were softer than the average for the site. Similarly, sherds from the lowest levels had faceted outer surfaces like those of Belle Glade Plain vessels. While St. Johns Plain sherds exhibited rough outer surfaces throughout the history of the site, smooth surfaces on such sherds were more common during early St. Johns II times than before or after. Scoring is more common in later than in earlier deposits and rare below a depth of 12 feet.

In an attempt to further define ceramic changes, all rim sherds were examined and classified into four lip variations: rounded, flat-rounded, flat, and pinched. Analysis showed random vertical distribution except for pinched lips which were limited to early St. Johns II and extremely late St. Johns I levels.

Introduction of check-stamping in the 16-17 foot level marks the time when, by definition, the change occurred between the St. Johns I and II cultural periods. At the same time, i.e. immediately after this change, a few Weeden Island period sherds occurred. These sherds indicate influences from the western part of the Florida peninsula where they are more commonly found. Griffin (1948a, p. 5) notes the similar occurrence of incised and punctated sherds in exactly the same stratigraphic position.

There is also a slight variation in the number of checks per inch. In early St. Johns II deposits, i.e. between depths of 9 and 16 feet, the number of checks varied from 3 to 9 per inch with a mode at 6 checks per inch. Above a depth of 9 feet, checks per inch ranged from 2 to 8 with a peak in the distribution at 4 per inch. It may be said that the number of checks per inch tended to be 6 in early St. Johns II levels and 4 in later deposits.

Analysis of the pottery from our work at Green Mound indicates the site was inhabited over three if not four archaeological subperiods. While our analysis differs a little from that used by Griffin (1948b), the general results are in substantial agreement. We both define (1) a lower St. Johns I period characterized by plain pottery. Next Griffin has three St. Johns II subperiods with (2) checks averaging 5 per inch, (3) checks averaging 7 per inch

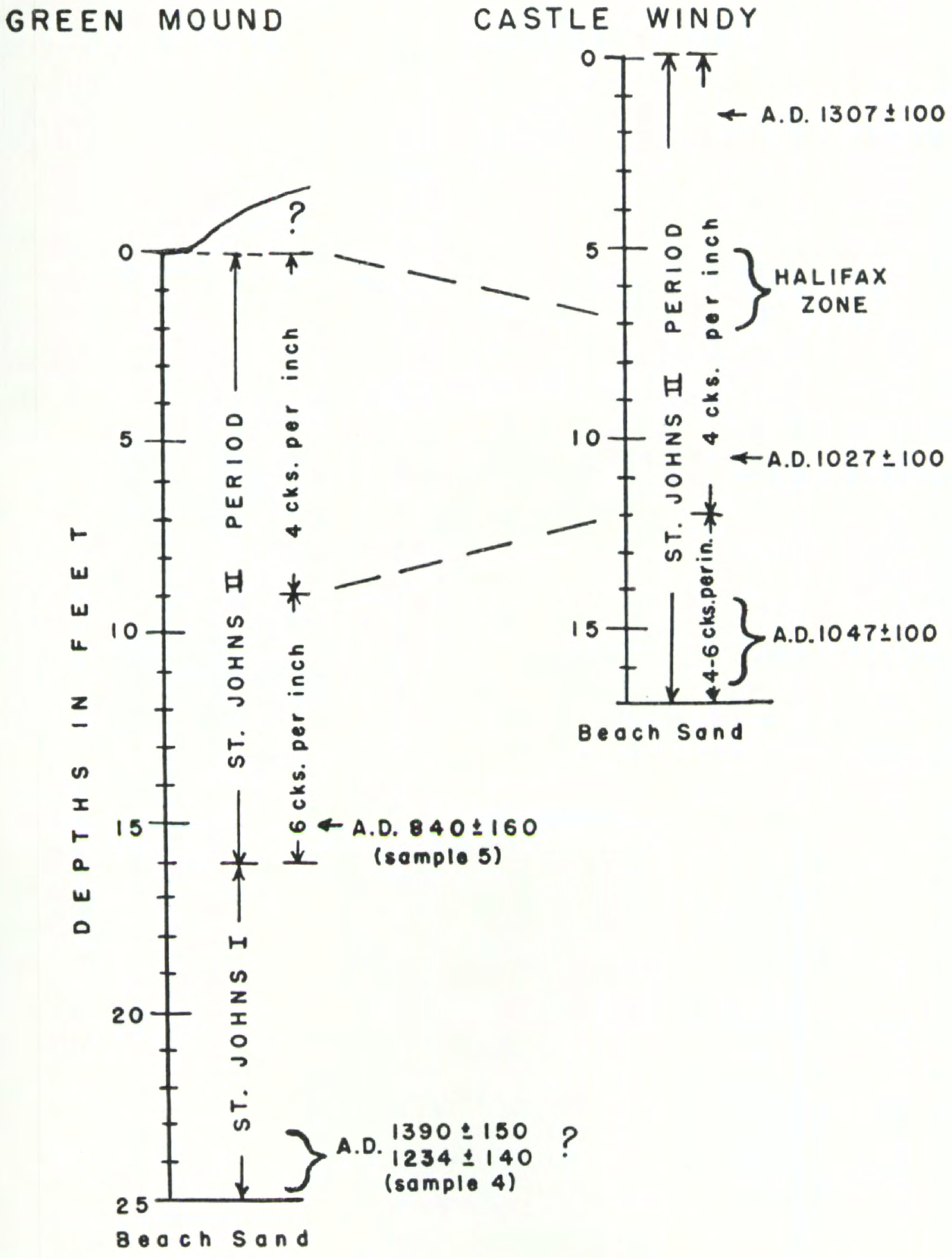
GREEN MOUND
CASTLE WINDY
DEPTHS IN FEET
0
5
10
15
20
25
Beach Sand
ST. JOHNS II PERIOD
ST. JOHNS I
4 cks. per inch
6 cks. per inch
?
A.D. 840 ± 160
(sample 5)
A.D. 1390 ± 150
1234 ± 140
(sample 4)
?
A.D. 1307 ± 100
HALIFAX ZONE
A.D. 1027 ± 100
4-6 cks. per in.
A.D. 1047 ± 100

Fig. 5. Stratigraphic comparison between Green Mound and Castle Windy.

and some other types of decorated pottery present, and (4) checks averaging 4 per inch.

Deposits between depths of 9 and 16 feet in Test Ib (with 6 checks per inch) would equate with Griffin's subperiods 2 and 3 (with 5 and 7 checks per inch respectively). These depths include or correlate with the floor where some other decorated pottery was found as for Griffin's subperiod 3. For higher zones, Griffin's subperiod 4 with 4 checks per inch agrees with the data from the top 9 feet of our Test Ia.

Figure 5 presents a correlation between Green Mound and the Castle Windy site 25 miles to the southeast. In this figure we have included the stratigraphic locations of samples of charcoal from these sites which have been dated by radiocarbon methods. Those from Castle Windy were dated at the Lamont Geological Observatory at Columbia University and discussed fully in our report of work at that site (Bullen and Sleight, 1959). Those from Green Mound were determined by Isotopes Incorporated of Westwood, New Jersey, and are reported here for the first time.

In Figure 5, dashed lines have been used to indicate approximate contemporaneity between certain points in the Green Mound and Castle Windy sections. The lower dashed line connects the vertical locations at both sites where the number of checks appear to change from 6 to 4 per inch. The higher dashed line shows the depth below which Halifax ceramics were not found. This is based on the fact that between depths of 5 and 7 feet at Castle Windy more sherds of Halifax than of St. Johns paste were found. No such Halifax zone was found at Green Mound—either by us or by Griffin—and it seems more probable the manufacture of Halifax ceramics occurred later than the time of the deposits tested by us. Hence, the second dashed line was drawn from the bottom of the Halifax zone at Castle Windy to the top of that part of Green Mound tested by us.

It will be noticed that the dates given for the lower zones at Castle Windy are a little later than A.D. 1000. As these deposits do not represent the beginning of the St. Johns II period, it is reasonable to expect the date for the change from St. Johns I to St. John II to be earlier. That such seems to be the case is indicated by the date of A.D. 840 ± 160 years shown for nearly the base of the St.

Johns II deposits at Green Mound. The sample from which this date is derived came from a hearth very close to the bottom of the floor in Test II. As mentioned earlier, it should date a period of time immediately after the introduction of check-stamping and the beginning of the St. Johns II period.

This date seems to us to be rather satisfactory. It agrees nicely with the dates from Castle Windy by being a little earlier as anticipated. It also is later than a date of A.D. 355 ± 250 years which we have from site Ja-63, a Weeden Island I or Kolomoki period site in the Chattahoochee River valley of West Florida which should by archaeological correlation be the temporal equivalent of middle St. Johns I times (Bullen, 1956; 1958, p. 331).

Dates shown for the lowest zones at Green Mound are not as satisfactory. This sample came from the lower levels of Test Ib in unquestionable St. Johns I deposits whose date must be earlier than that of the shallower sample from Green Mound and also earlier than both of the lower samples from Castle Windy. The dates indicated are hundreds of years later. Obviously, something is wrong.

The two dates given, A.D. 1390 ± 150 years and A.D. 1234 ± 140 years, are from two runs made on the same sample. The second run, made as a check on the first, resulted in a date 156 years earlier than that from the first run but did not materially improve the situation. We feel that this date should be disregarded as it disagrees with all other known information about the St. Johns I period.

As indicated earlier, a date of around A.D. 800 may be suggested for the division between St. Johns I and St. Johns II. This date may, by extension, be applied to the similar division between the Weeden Island I and Weeden Island II periods of the Central Gulf coast of Florida which is also marked by the introduction of check-stamped pottery (Goggin, 1952, pp. 36, 54).

It will be remembered that other types of decoration were found at Green Mound by both of us and Griffin in levels deposited immediately after the introduction of check-stamping. This decoration is like that found on pottery of the Weeden Island periods of western Florida. Influences, presumedly originating in the Florida Northwest Coast region, introduced check-stamping into both the Central Gulf and Atlantic coastal areas around A.D. 800. At that time pottery in the western part of the peninsula was decorated by incision, punctation, and complicated stamping while that of the eastern part was undecorated. Of the various decorative forms introduced at this time, only check-stamping was accepted by the Indians of the St. Johns River-Atlantic Coast area and used thereafter as a cultural norm.

Our tests demonstrated that the remaining portion of Green Mound still contains a great deal of scientific information. Careful excavation would reveal house patterns and other data at present unknown for Florida sites of the cultural periods present at this mound. It is to be sincerely hoped that Green Mound, if it is ever further disturbed, be carefully excavated by competent archaeologists. Complete excavation would be a long and expensive proposition but it should be worthwhile in terms of new data on the prehistory of Florida.

SUMMARY

It is interesting to review the overall findings at Green Mound in the light of the comparative data gathered by us at the Castle Windy midden further south along the same coastal strip. Our excavations have demonstrated that Indians were building the first levels and deposits of the Green Mound several hundred years prior to the first occupation of the Castle Windy site. Actually, the people at Castle Windy were only contemporary with the upper portion of the time scale at Green Mound. In both cases there is no evidence that either site was still being used by the time of the coming of the first white explorers.

The early Indians of Green Mound selected as their site a spot which, at that time, must not have been too far removed from the actual beach of the Atlantic. Our tests indicated an overall foundation of yellow beach sand with an admixture of fine, crushed shell unlike dune sands. The present surf beach is some five hundred yards to the east.

After having developed a low and apparently wide spread midden, these first peoples at Green Mound covered the midden with a gray-white dune sand. The question still remains as to whether or not this was intended as a "flooring." That it was man made is proven by the presence of pottery sherds within the sand.

The occupation evidenced by all materials below the 17 foot level in Test Ib is principally represented in ceramics by St. Johns Plain pottery. This phase of time in Florida prehistory is generally considered as one wherein the people lived a semi-settled or sedentary form of life. Undoubtedly, some agriculture was being practiced although much reliance on hunting and gathering still dominated the subsistence habits. It is of more than passing interest to note that associated with the zones of St. Johns Plain pottery, we found at Green Mound an unordinary preference for clams in this lower zone, as an element of diet. On the basis of thinking developed in conjunction with the Castle Windy studies (Bullen and Sleight, 1959, p. 29), we might conjecture that the "St. Johns Plain pottery people" lived in and occupied the Green Mound area either (1) in the warmer months or (2) throughout the year exclusively (not an winter occupation as suggested for the upper levels). Of course, it might be argued that the ecology of this time zone was such that oysters were not available. That this is incorrect is illustrated by the occasional discovery of an oyster shell in this otherwise predominantly clam zone.

Above the 17 foot level, however, a series of interesting things happened in the lives of the Green Mound Indians. This, by the way, was approximately A.D. 800. At this time an abrupt change was made in ceramics to the style known as St. Johns Check Stamped with a continuance of the earlier plain style. This probably represents part of a general influence spreading in from the northwest Florida coastal region, a fact noted in other archaeological sites. The presence of a sample of Weeden Island-like sherds also indicates west Florida association of some type. With the evident abruptness of change at this level, it is conceivable that a change of peoples may have taken place then to a large or small degree.

The subsistence pattern changed abruptly at this period, too. Immediately, with the pottery change came a shift in preference for oysters and coquinas with occasional continued usage of clams. Coupled with the bone evidence of birds and animals, we believe that here again—as demonstrated previously at Castle Windy—a seasonal, winter occupational pattern is evident. The period of time when St. Johns check-stamped pottery was being made has been determined through previous studies as a period of time when agriculture was undoubtedly more intensified. It was a time of seasonal planting, seasonal harvesting, and seasonal hunting and gathering. In the light of our findings reported from Castle Windy as well as Green Mound, we feel that these St. Johns Check Stamped pottery making Indians were therefore migrating back and forth from the coast to inland sites: winter on the coast and inland during spring and summer.

The Indians who lived above the 17 foot level of our excavations at the Green Mound had also executed another interesting feat in addition to pottery change and subsistence shift. They apparently leveled the top of the existing midden with a gray-white dune sand and began the construction of some type of structures on the summit. The accumulated debris as well as the presence of fire pits would indicate habitation. Floors upon floors were built of clay, sand and ash. Through a zone of four feet, we encountered innumerable structural clues and a jumble of post hole molds. Some of the supporting timbers appear to have followed a circular house pattern, but the evidence is inconclusive. It is sufficient to state that this zone of activity at Green Mound is most unique and warrants search and observation in other sites.

The uppermost deposits of oyster and coquina revert to usual midden structure as found at Castle Windy and elsewhere. The Indians who accumulated these shells were contemporary with the people who built the lower two thirds of the Castle Windy midden. For some undetermined reason, neither of these sites appeared to have been utilized by the time Europeans made their first inroads along the Florida east coast.

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